

1. Term 1

1. The difference between natural disasters and natural hazards
2. Geographical phenomena
3. Tropical cyclones

2. Term 2

1. Earthquakes
2. Volcanoes
3. The effects of population growth and change on the lives of people

3. Term 3

1. The effects of population growth and change on the lives of people
2. Long term effects of migration on the population
3. Population growth and change: the impact of HIV/Aids

4. Term 4

1. The reading, analysing and interpretation of topographical maps
2. Reading, analysing and interpreting vertical aerial photos and orthophoto maps
3. Reading, analysing and interpreting vertical aerial photos and orthophoto maps

The difference between natural disasters and natural hazards

SOCIAL SCIENCES: Geography

Grade 7

NATURAL HAZARDS

Module 1

The difference between natural disasters and natural hazards

- Natural hazards are geographical events which

occur naturally UNDER (earthquakes and volcanoes), ON (floods) or ABOVE (climatic conditions such as droughts and tropical cyclones) the surface of the earth. Things such as droughts, floods, tropical cyclones, volcanic eruptions and volcanoes regularly happen on a small scale throughout the world. However, if one of these natural hazards leads to – a significant loss of human life and/or – damage to property, and/or – environmental damage, it is called a NATURAL DISASTER.

- Disasters know no boundaries, and can lead to the loss of thousands of human lives in the areas where they occur.

1. Droughts

1.1 The occurrence and cause of droughts

1.1.1 What are droughts?

A drought is a continuous and lengthy period during which there is no or insufficient precipitation. Thus it is associated with a lack of water, but it does not always lead to a disaster. It is the relationship between the community and their environment that will determine whether a drought will develop into a disaster or not. Isolated droughts rarely occur out of the blue. They usually creep up on a community over several years.

1.1.2 Where do droughts occur?

Study figure 1. It is a world map showing the areas where most droughts occur. You will note that certain countries experience more droughts than others, but that the African continent and India suffer the most from serious droughts.

NUMBER OF DROUGHT/FAMINE DISASTERS BY COUNTRY: 1974 - 2003

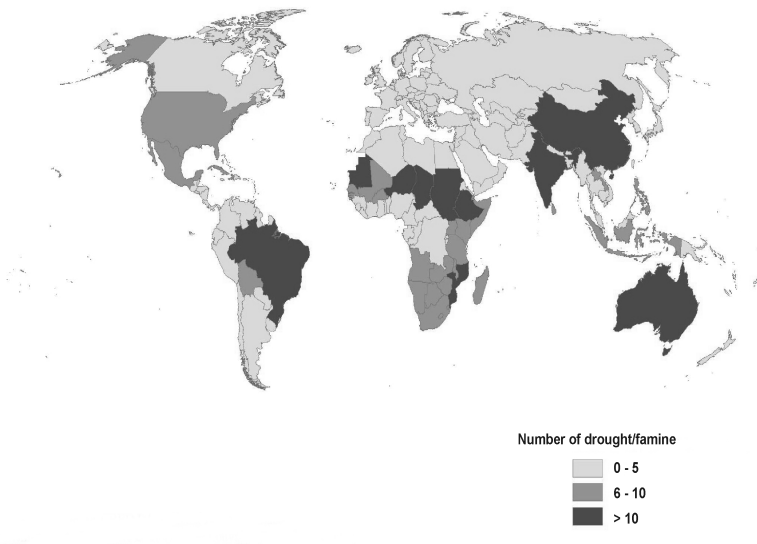


Figure 1

Activity 1:

To study the dry regions of South Africa

[LO 2.1]

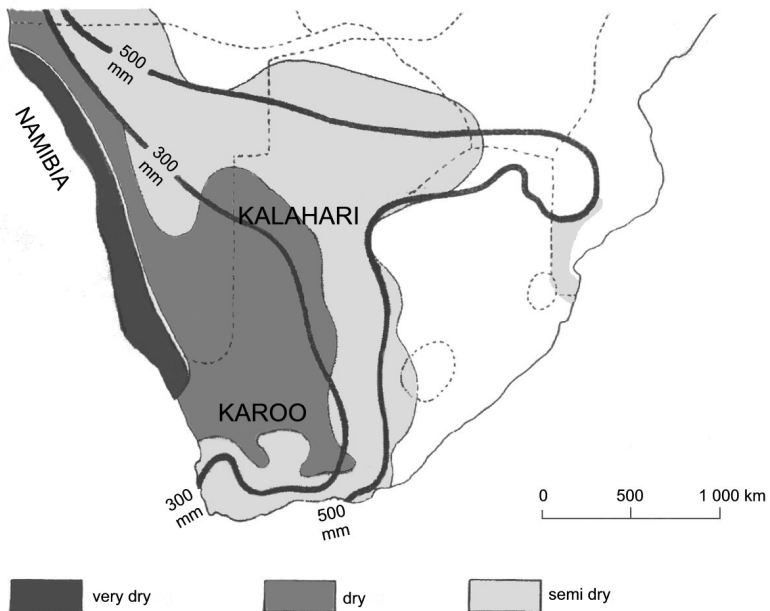


Figure 2

a) Make an estimation as to what percentage of South Africa experiences rainfall of less than 500 mm per year.

b) Where in South Africa are droughts most likely to occur? Why?

c) Where in South Africa are droughts least likely to occur? Why?

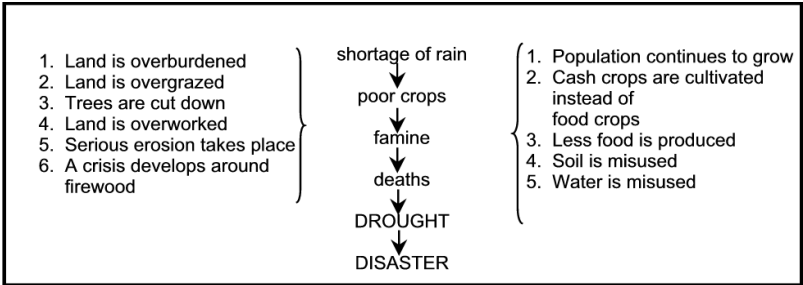
d) Name ways in which a farmer in the Northern Cape can take precautionary steps against future droughts.

1.1.3 What causes droughts?

Water is essential for life on earth. A drought is the result of a lack of water. Many people think that a drought occurs merely because it doesn't rain. A decrease in rainfall does indeed cause droughts, but this is not the only cause.

Study table 1, which shows how other factors can lead to the disastrous conditions which are associated with droughts.

Table 1:



Thus changes in climate are indeed implicated in droughts, but poor environmental management has a greater influence on the disastrous impact of a drought.

1.2 The effect (consequences) of droughts on the lives of people and their socio-economic activities

During a period of about 10 years approximately 60 million people worldwide are affected by droughts, and this number continues to increase. In the 1990s, in Africa alone, 35 million people were affected by drought. What will the situation be in the future?

Study the following list of consequences of droughts:

- no crop rotation
- failed crops
- famine: less food is produced
- loss of lives
- wells dry up as a result of the lowered water table
- stock are slaughtered on a large scale: meat prices fall
- hydro-electric plants may stop operating: electricity prices rise
- unschooled labourers earn less income: poverty
- water restrictions are imposed
- industries suffer due to a lack of water
- vegetation dies and disappears
- dust bowls develop on bare soil, and air pollution worsens
- workers lose their jobs and their income: unemployment causes crime
- increasing population places more strain on the environment and a vicious circle of disasters develops
- water levels of rivers and dams fall and some dry up completely: fish die

- a decrease in the gross national product (GNP) of the country
- desertification of marginal areas
- people are forced to migrate out of drought-ridden areas: many are unschooled

Activity 2:

To study the effects of droughts on people and areas

[LO 2.3]

1.3 Why are some people at a greater risk than others?

It is important to remember that the relationship between humans and their environment determines whether a drought will deteriorate into a disaster.

If we take another look at figure 1 (world map showing where most droughts occur), we see that

droughts most often occur in the poorer, developing countries of the world. Why?

- Because of their disadvantaged status they still believe that power lies in numbers, and that parents should have many children who can take care of the parents in the future. This leads to a great number of births and an increasing population.
- Food is only cultivated for personal domestic use. No fertilisation takes place. Over the years the soil becomes impoverished and harvests decrease in size. Less food is produced.
- Soil is misused over a long period and no fertiliser is added.
- Irrigation, if available, is applied incorrectly and this exacerbates erosion.
- Owning a herd of cattle is of great importance to these people, because to them this represents great wealth. Too many cattle are placed on a piece of land with the result that overgrazing destroys the vegetation. This leads to erosion.
- Erosion removes the fertile topsoil, the soil becomes impoverished and production is further reduced.
- In addition, poor people do not have access to electricity, and they have to rely on wood fires for heat. Thus many trees are destroyed for firewood. This in turn reduces the soil's water retention capacity, which causes water to evaporate faster.

Disastrous droughts also occur in developed areas, such as the current drought in the Western Cape of South Africa. Yet the fact remains that rich people seldom die as a result of droughts. They can survive because they have other assets which can carry them through the difficult times. However, the large, rich farmers and/or companies are also sometimes destroying the environment with their enormous developments.

1.4 Preventative measures: risk management and risk reduction

When you read the newspaper, or watch or listen to the news, you will undoubtedly become aware of a drought somewhere in South Africa. Look at figure 2 again, which shows the dry areas in South Africa. It is not surprising that South Africa experiences many droughts.

Are there possible solutions to the drought problem? Although it is not always possible to carry out all the steps needed to solve the problem, we can take a look at some of the things that can be done:

- building dams to accumulate water
- sinking boreholes and erecting windmills
- desalinating sea water
- establishing water installations through the use of pipelines
- melting icebergs

- cloud seeding and rain making
- population management
- careful management of soil and water resources
- controlling soil erosion
- planting trees
- attempting to reclaim soil through the use of drought-resistant seed

Activity 3:

To do a case study on a serious drought in the country

[LO 2.3]

Do a case study on a serious drought in South Africa. Compare it with the information you have gained so far, and then write an essay about:

a) the causes

the consequences

c) possible solutions for disastrous droughts.

Assessment

Learning Outcomes(LOs)

LO 2

GEOGRAPHICAL KNOWLEDGE AND

UNDERSTANDINGThe learner will be able to demonstrate geographical and environmental knowledge and understanding.

Assessment standards(ASc)

We know this when the learner:

2.1 describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places];2.2 investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources];2.3 identifies how risks and hazards can be managed [people and the environment].

Memorandum

Activity 1:

1. Approximately 60%
2. North-Western Cape and the Karoo.

1. The area lies far from the rainy eastern coast where hot, humid air flows into the country. As the hot, humid air is blown westwards, rain falls in the mountainous eastern areas, so that most of the humidity never reaches the western part of the country.

2. The West coast borders on the Atlantic Ocean where the cold Benguela Current flows, and there are relatively few mountains. Consequently the air does not move upwards (only hot air moves upwards, especially in mountainous areas), so that condensation cannot take place.

3. Evaporation (from the soil, plants and dams) is high in the dry western areas.

c) The eastern parts of South Africa

The East coast borders on the Indian Ocean where the warm Mozambique Current flows. Consequently the temperature of the air over the water also rises, condensation takes place and clouds are formed. These clouds are then blown towards the land, bringing rain to the areas bordering the ocean. The eastern side of the Drakensberg will therefore receive more rain because of its orthographical

character. To the west of the Drakensberg the rain will decrease in a westerly direction, as the air becomes drier. Also the humid air is only blown beyond the mountains during summer, because of the higher levels of condensation (air containing more water is lighter).

d) 1. Building dams for water conservation.

2 Desalination of water.

3. Digging boreholes and erecting windmills.

4. Installing pipelines to lay on water.

5. Careful management of the soil and sensible, suitable farming methods.

6. Controlling soil erosion.

7. Planting trees and other crops.

8. Sowing drought resistant seed.

- Human behaviour should change radically and everybody should become environment-conscious.

Activity 2:

1. Africa, South Africa, India, China and Australia.

2. Add own ideas to existing list.

3. Human activities such as:

- Overgrazing of land;
- Overcultivation of soil;
- Felling of trees and the complete deforestation of areas;
- Demands by the population in overpopulated areas; poor irrigation causing salination and/or calcification of the soil, aggravates the effects of droughts. (The salt found in the soil rises to the surface due to an increase in the water table as a result of irrigation.)

The total effect of these human activities causes productive land to change into, arid, infertile areas. These conditions are often aggravated by droughts.

Activity 3:

Learners do their own research on any past drought in our country. Think for instance on the drought experienced by the South-western Cape in 2004/2005.

Write an essay under the following headings:

1. Causes

b) Effects

c) Possible solutions

Geographical phenomena

SOCIAL SCIENCES: Geography

Grade 7

NATURAL HAZARDS

Module 2

GEOGRAPHICAL PHENOMENA

. Floods

1. The occurrence and cause of floods

1.1 What is a flood?

A flood occurs when there is excess water. Soil which is not usually under water becomes covered by water during a flood.

It is a general rule across the world that a yearlong drought is suddenly ended by persistent heavy rain. Such disasters then lead to questions such as: Is the climate changing?

Activity 1:

To hold a certain opinion about a geographical phenomenon

[LO 2.1]

Give your opinion on the statement: The climate of the earth is changing

1.2 Where do floods occur?

Have a look at figure 3 (a world map showing where the most serious floods have occurred) on p. 10.

You will notice that the most floods occur in India, China and North and South America. Yet floods can occur in practically any environment where water is found. Serious floods can even occur in deserts. Remember that there are various possible causes of floods, and these causes determine WHERE the flood occurs.

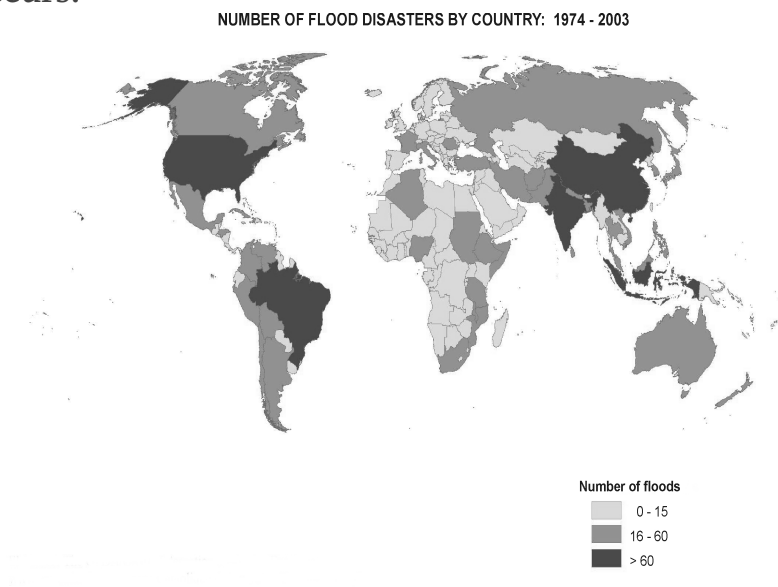


Figure 3

1.3 What causes floods?

Water that floods certain parts of the earth can occur as a result of various reasons. Here are a few causes:

- Melting snow which increases the amount of water in rivers.
- Exceptionally high rainfall in a specific area causes rivers to flood their banks. This kind of rainfall is usually associated with storms, cyclones and monsoon rains (India). Examples of this are the Laingsburg flood and cyclone Demoina, which hit Natal.
- Dams overflow or their walls break and/or rivers burst their banks.
- Landslides, earthquakes and volcanoes can disturb rivers and other bodies of water and lead to floods.
- Floods along the coast are the result of enormous sea waves (tsunamis) which are caused by earthquakes on the ocean floor. More about this when we study earthquakes.

2. The effect (consequences) of floods on the lives of people and their socio-economic activities

Human activities cannot cause floods, but people can worsen the extent and damage indirectly by:

1. Careless use of the soil as a result of

- deforestation
- overgrazing
- soil erosion

Thus natural vegetation and the roots of the plants are destroyed. This means that the plants cannot

hold the topsoil during heavy rainfall. Also, rainwater is not optimally absorbed by the soil. The rainwater flows away rapidly and takes the surface soil with it. As a result, rivers and dams are silted up.

1. The construction of roads, buildings and channels also destroys the natural vegetation, and increases the draining effect.
2. Houses are built on less appropriate or even dangerous terrain where floods can occur.

An example of a flood in South Africa.

On September 30th, 1987, a violent tropical storm broke out over Natal. At least 180 people died. Thousands of shacks collapsed under the heavy rain. Roofs were ripped off and houses were seriously damaged. Seven thousand families were left cold and hungry with no roof over their heads, in a single day. Most of the bridges and roads were washed away and emergency personnel could not reach victims by truck. The electricity failed and there was no sewerage or tap water. All the pipelines were destroyed by the floodwaters. Businesses came to a standstill and severe financial losses were felt in the economic field. Farmers lost their harvests and their cattle. All the rich topsoil was washed away and would take years to recover. The walls of farm dams broke and fences were swept away. These alone would bring about serious

financial implications if they were to be fixed.

The bodies of people and animals were strewn about, which caused a health risk. This caused the water to become polluted, and another health risk reared its ugly head: cholera.

A similar situation occurred during the flood at Laingsburg on January 25th, 1981.

Activity 2:

To make a list of the consequences a flood has for people

[LO 2.1]

- Read newspaper articles about these and other floods that occurred recently. Make your own comprehensive list of the CONSEQUENCES a flood has on the lives of people as well as on their socio-economic activities.

3. Why some people are at a higher risk of being affected by a flood than others

In many parts of the developing countries of the world the natural environment is misused and has become depleted. Because poor people usually produce for their own use only and never fertilise their land, the soil becomes impoverished and exhausted. Incorrect irrigation methods exacerbate the situation and the richer surface soil is swept away. Harvests become poorer every season and the people are faced with famine. No crop rotation takes place and cattle destroy the natural vegetation. For these people their wealth lies in the number of cattle they own, not in the quality of their cattle. Thus too many cattle are put to graze on a certain piece of land, which then destroys that land. If a flood were to occur in such an environment, there would be no natural vegetation to stem the water and everything would be washed away.

As soon as life in a rural area becomes unbearable people start to migrate to cities in search of possible employment. Since they are poor, they are forced to live in squatter camps. These squatter camps or informal settlements are usually located on less suitable or even dangerous terrain. As soon as a flood occurs these people's houses, property and lives are in great danger. Here you only have to think of the wet Cape Flats with its thousands of homes.

Activity 3:

To study the impact of a flood on a residential area

[LO 2.1]

- How do you think a flood will particularly affect a squatter camp?

4. Preventative measures: risk management and risk reduction

What can be done about floods?

The answer to this question is usually, “Not much”. However, people can take certain preventative steps to try to reduce the risk of future floods. Below are a few possibilities:

- Installing flood-warning systems near important rivers where large populations are

located.

- Building dikes, flood banks and weirs to help control the flow of water.
- Changing the flow channels of rivers – e.g. guiding a river away from a populated area.
- Enforcing strict regulations with regard to construction sites, building codes and construction requirements.
- Educating people to use the natural environment carefully and wisely, while paying special attention to training with regard to environment-friendly farming techniques.
- Stabilising riverbanks.
- Controlling and improving ditches that are badly eroded.
- Planting vegetation in barren areas.
- Monitoring weather predictions carefully, and taking the necessary precautions where possible.

Many of the precautions mentioned above are expensive to apply, and are not even always practicable. Developing countries cannot afford them, thus the chances are slight that they will apply these possible solutions. Therefore the impact of floods remains a substantial problem in these developing countries.

Activity 4:

To find solutions that will prevent floods

[LO 2.3]

Can you think of any other solutions that will prevent floods?

Assessment

Learning Outcomes(LOs)

LO 2

GEOGRAPHICAL KNOWLEDGE AND

UNDERSTANDINGThe learner will be able to demonstrate geographical and environmental knowledge and understanding.

Assessment standards(ASc)

We know this when the learner:

2.1 describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and

their impact on human lives and socio-economic activities [people and places];2.2 investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources];2.3 identifies how risks and hazards can be managed [people and the environment].

Memorandum

Activity 1:

- The earth's climate is presently changing. It is also a well-known fact that the climate of the earth has indeed changed in the past – think of the earlier ice age.
- It is highly probable that the earth's climate will change in future. This will certainly not happen in our lifetime. It is a gradual process that takes place over millions of years.
- We know that there has lately been a lot of talk about the so-called “hothouse effect” and “global heating”. This is true, but the world is surely not going to change into a melting-pot in a few years' time.
- Research has shown that parts of South Africa experience periods of wet and dry conditions. A wet period lasting from 7 - 9 years is usually alternated with a dry period of about 7 - 9 years. Past forecasts have indicated that the

1990's would be "wetter", followed by "drier" years after 2000. This seems to be quite accurate if we look at the present situation.

Activity 2:

Learners do research on the results of floods.

They could possibly elaborate on some of these answers:

- Loss of lives;
- People left homeless, causing famine and disease;
- Houses, buildings and roads are damaged. a Complete town can be wiped out in this way;
- Electricity, water and sewage services are destroyed;
- Everything is buried under mud;
- Serious pollution (especially water pollution) causes health hazards;
- People lose all their personal belongings, crops and/or livestock. This has serious financial implications for the population and the government alike;
- Damwalls may break, causing floods. The country's productivity is adversely affected and the economy is put under severe pressure;

Communication services break down. There is no contact with the outside world and rescue teams cannot reach the area.

Activity 3:

- As squatter camps usually spring up in lower-lying, poorly drained areas, the impact of floods is even worse there.
- People are left homeless and the informal houses are flooded or completely destroyed.
- People may drown.
- People lose all their personal belongings and become even poorer, for they have no other reserves.
- Electricity, water and sewage services are interrupted, if it ever existed.
- Transport systems are damaged and people cannot evacuate the area.

Activity 4:

Learners try and find possible solutions for floods and state their own views.

Tropical cyclones

SOCIAL SCIENCES: Geography

Grade 7

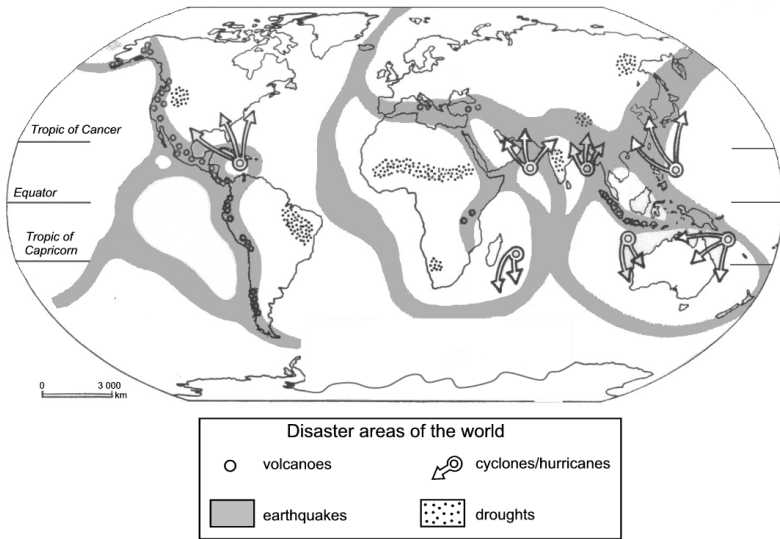
NATURAL HAZARDS

Module 3

TROPICAL CYCLONES

1. Tropical Cyclones

- The occurrence and cause of tropical cyclones



No weather phenomenon is more terrifying and destructive than a tropical storm. In America such storms are called hurricanes, in Asia typhoons, in South Africa tropical cyclones and in Australia Willie-willies.

Features of tropical cyclones

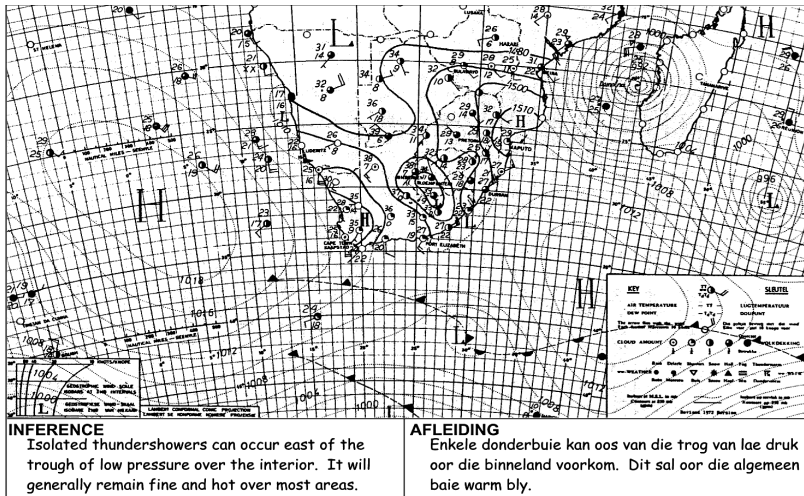
They develop over the warm, tropical oceans near the equator. The warm, tropical seawater heats the air that rests upon it up to temperatures of $\pm 27^{\circ}\text{C}$. The high degree of evaporation makes the air very humid. That is why the tropical easterly winds are chiefly characterized by the fact that they are hot and humid. This causes the air above the oceans to rise swiftly, resulting in extremely low pressure. The convection currents start spiralling at an ever increasing speed. The air rises more and more, and

condensation and cumulus and cumulonimbus clouds are formed. The rotation of the earth on its own axis causes the cloud masses to circle, which creates a gigantic, swirling storm.

In the centre of this cyclone there is an eye of moist, cloudless weather that can be about 35-50 km wide. Here atmospheric pressure readings are less than 1 000 hPa. Directly around it storm winds rage at 120-280 km/h. Stormy weather can occur up to 200 km from the eye, and these storms can continue for a few hours or even for a number of days. They move forward slowly (15-20 km/h) and start to subside as soon as they reach the land surface or cooler water. Great destruction, heavy downpours and tidal waves occur for a number of days along the coastal areas of the affected countries.

Traditionally cyclones were named after women because of their capricious nature. Nowadays they are sometimes also named after men. The relentless tropical cyclone “Hugo” that hit the east coast of America in 1989 is one such example.

Such a storm would be indicated on a weather chart by round isobars that are closely positioned around the eye.



Synoptic weather chart

2. The effect (consequences) of tropical cyclones on peoples' lives and their socio-economic activities

South Africa does not often experience the utter ferocity of a tropical storm. However, when it does occur, it causes just as much destruction as in other parts of the world.

The worst cyclone that has ever been recorded along the South African coast was the tropical cyclone Demoina. On 25 January 1984 Demoina veered inland from a position near Maputo. The following two days it caused violent storms, high winds and a great deal of rain over parts of South Africa. At some places as much as 540 mm was recorded in a period of 24 hours. In Northern Natal rivers burst their banks. Villages near rivers were totally

destroyed, bridges were washed away and crops on the banks of the rivers were destroyed. Damage to sugar plantations was estimated at R150 000 000. At least 200 people lost their lives. It was difficult to carry out rescue operations because most of the bridges and roads in the affected areas had been washed away. The gale force winds made conditions extremely hazardous for helicopters. Bodies of victims, and even crocodiles, were washed into the sea. The death toll rose even higher as a result of waterborne diseases and famine.

Activity 1:

To do research on the effect that tropical cyclones have

[LO 2.1]

Read the information above on Demoina and make a list of the consequences of tropical cyclones. Look in newspapers and other sources of information for articles on tropical cyclones so as to extend your

own list.

Why do tropical cyclones cause extensive flood damage but relatively little storm wind damage to an area?

What is meant by the “eye” of a tropical cyclone?

3. Why some people are at a higher risk to be affected by tropical cyclones than others

Tropical cyclones also cause great damage in the developed parts of the world, but they are usually not as disastrous. Communication systems are well developed and a large percentage of the population is thus aware of the approaching danger. They can take precautionary steps in time or evacuate the area. The construction of their houses and other buildings also makes it more likely that they will be able to withstand the storms.

However, a tropical cyclone can have very serious implications in the developing parts of the world. *Firstly*, these areas are densely populated and great numbers of lives can be lost, because many of these people also live in less desirable, more dangerous areas. *Secondly*, their houses are also often poorly constructed, which means they can be severely damaged or even destroyed during such a storm. *Thirdly*, these areas do not have good infrastructures which could limit or decrease the effects of such a disaster. Thus paramedics and other emergency

services personnel cannot reach these people quickly enough. A substantial percentage of the deaths that occur, come about after rather than during the storm.

Activity 2:

To study the effects of cyclones on people's lives

[LO 2.1, 2.3]

- How can tropical cyclones cause people's death?

4. Preventative measures: risk management and risk reduction

Even though a great deal of scientific knowledge exists regarding tropical cyclones, there is actually fairly little that can be done to prevent the damage these storms cause.

Still, there are a few things that can be done to reduce the damage to a certain extent:

Early warning systems involving satellite images, radar and weather station data can be used to predict the approach of a tropical cyclone;

Cloud seeding, a process which spreads out the energy of the cyclone and reduces the wind speed, is quite successful;

Limiting the damage it causes. This is probably the best way to handle a storm. Typical precautionary steps include the following:

- Shutters, windows and doors are nailed shut.
- Property is tied down, and all loose objects are packed away or tied to heavy furniture and trees so that they cannot be blown away. Flying objects usually cause great damage and can even cause people to be killed.
- Sandbags are piled up in places where a flood is expected, to halt most of the impact of the flood.
- People and property are evacuated from the area.

Activity 3:

To plan to aid people in a disaster area

[LO 2.3]

1. Imagine that you are the leader of an emergency team that is sent by the Red Cross to a tropical cyclone disaster area. Devise a plan to help the affected people. What would be the first measures to take? How much time would your rescue operation take?
2. Which precautionary measures can be taken to minimise the effect of tropical cyclones? Study the cyclone-warning pamphlet on p. 23 that is issued by the American Weather Bureau to assist you.

When a **HURRICANE** threatens...



Keep your radio or TV on . . . and listen to the latest advice from the Weather Bureau to ensure the safety of your life and property.

BEFORE THE WIND AND FLOOD



Fill the tank ...
check battery and tyres

Build up a supply of drinking
water. Collect food that does
not require cooking or freezing.



Keep a torch, first-aid kit, fire
extinguisher and a battery-
operated radio handy.

Store all loose objects, toys,
tools dirtbins, sun shades, etc.
Board close all windows.



Evacuate all low-lying areas.

DURING THE STORM



STAY INDOORS . . . Do not get misled when the
calm "eye" moves right over you . . . and do not
get caught outside when the hurricane winds
restart from the **OPPOSITE** direction.



Listen to your radio or TV for information from the
Weather Bureau, Community Protection, the
Red Cross or any other institution.

AFTER THE STORM



STAY OFF THE ROADS, unless it is a necessity.
Beware of eroded pavements and damaged
power lines.



Report damaged power lines, waterpipes or
sewage pipes to the necessary authority or
to the nearest policeman.



Be extremely careful to prevent fires starting or
to prevent injuries as a result of falling objects.



Use the telephone for emergencies only.

**YOUR ABILITY TO HANDLE EMERGENCIES
WILL HELP AND INSPIRE OTHERS**

U.S. DEPARTMENT OF COMMERCE • WEATHER BUREAU

Assessment

Learning Outcomes(LOs)

LO 2

GEOGRAPHICAL KNOWLEDGE AND

UNDERSTANDINGThe learner will be able to demonstrate geographical and environmental knowledge and understanding.

Assessment standards(ASc)

We know this when the learner:

2.1 describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places];2.2 investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources];2.3 identifies how risks and hazards can be managed [people and the environment].

Memorandum

Activity 1:

1. The effects of tropical cyclones:

- Loss of lives among human beings and animals;
- Rivers overflow and towns near rivers are also flooded or even destroyed;
- Decaying bodies cause pollution and health hazards;
- Bridges and roads are washed away;

- Electricity, water and sewage services are interrupted;
- Houses and other buildings are destroyed or severely damaged;
- Crops are destroyed;
- Gale force winds blow away roofs and uproot trees and shrubs. This is also dangerous as people might get injured;
- No fresh water or food. This leads to famine and death.

1. Tropical cyclones originate in warm, humid tropical oceans. The strong winds cause gigantic waves in the oceans. These waves flood the coastal areas and cause enormous damage.

As soon as the tropical cyclone reaches the land, it has no warm, humid sea air to thrive on, and it dies away. That's why there will still be gales for quite a time, but they subside as the cyclone dies.

1. The area of calm, cloudless skies in the middle (centre) of a tropical cyclone is called the "eye". It has a width of about 35-50 km. Here the pressure is less than 1 000 kPa. The area directly around the eye is where the strongest gales occur.

Activity 2:

- During tropical cyclones most deaths occur

because of the floods. Rivers that suddenly come down may unexpectedly flood a region.

- Some people try to cross a river which is in flood and are washed away by the water masses.
- Gale force winds that blow away roofs and other items, may also cause deaths.
- However, once the storm has passed, most deaths occur because of water pollution, health hazards, hunger and thirst.

Activity 3:

1. EMERGENCY SERVICES

1. Fire rescue teams must set out to extinguish possible fires.
2. Immediately start searching for bodies and animal carcasses.
3. Take fresh water and food supplies to be handed out to the people.
4. Take medical teams and supplies to treat the injured. Erect emergency hospitals.
5. Arrange for helicopter services to transport the injured to national hospitals outside the area as soon as possible.
6. Take or send specialists to repair the electricity, water and sewage services as soon as possible.
7. Repair all communication services as soon as possible.
8. Clear all debris and stray objects to prevent

further injuries.

2. PRECAUTIONARY MEASURES

1. Promptly leave all low-lying areas.
2. Everybody should take care that their cars are filled up with fuel. Also check the battery, water, oil and tyres. If the need arises, evacuation can take place smoothly.
3. Conserve water for drinking purposes.
4. Stock up non-perishable foodstuffs.
5. Have a flashlight, first aid kit, fire extinguisher and battery radio at hand.
6. Stack all loose objects away or tie bigger items to sturdy pillars.
7. Secure all windows with nails and board
8. Listen to the radio and watch TV for information from the weather bureau.

Earthquakes

SOCIAL SCIENCES: Geography

Grade 7

NATURAL HAZARDS

Module 4

Earthquakes

1. The occurrence and cause of earthquakes

A scientist who had experienced a powerful

earthquake told of how it seemed to him as if the whole world had become a carpet that was given a good shake and was laid down again. People, buildings, mountains – everyone and everything seemed to have become mere dust on the carpet.

[From: *Die Huisgenoot - Jongspan*, 21 May 1987]

You need to remember that the earth's crust consists of large, flat plates of rock. They are kilometres thick and drift on the dense, warm mass of magma of the mantle. The movement is very slow, so it cannot be perceived. The layers of rock that are closer to the mantle are hotter and melt more readily. Nearer the surface of the earth, the layers of rock are cooler and therefore harder.

Where the plates of the earth meet, they collide or slide against one another. Because of the shifting of the layered rock, they may bend or fold and even break like a plank that is broken in two. The earth's crust is able to withstand the stress and pressure that is built up because of the movement from within. When it reaches a point at which it cannot accommodate the pressure by bending or folding, it cracks and breaks. Then there is a shift in the layers of rock and people perceive it as an earthquake. A *fault line* occurs which is even visible at the earth's surface.

An earthquake is felt for a few minutes only, but

after-shocks may occur for a while afterwards.

The well-known San Andreas fault runs through San Francisco in the American state of California. Millions of people live in this area, and are aware of this threat.

Figure 5 shows how the large rock plates move past one another very slowly (5 – 7 cm per year). When the sides hook onto one another, the stress increases. The rocks suddenly move and start to break off. The result – an earthquake occurs.

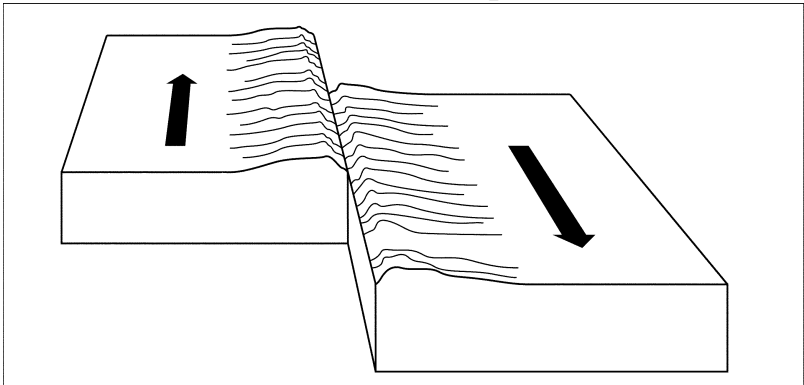


Figure 6

The strength of an earthquake is measured by a seismograph

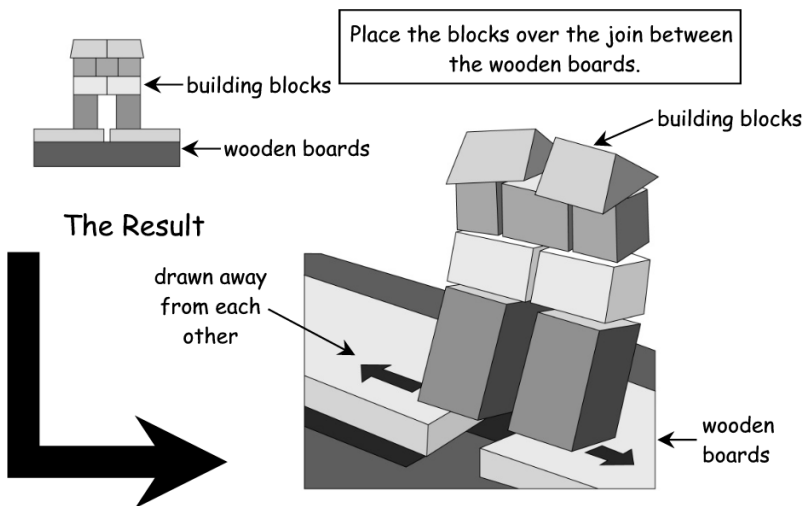
Activity 1:

To build a model of an earthquake

[LO 2.1, 2.3]

Making a model of an earthquake: Work in groups.

1. Obtain two equally thick wooden boards. Place them alongside one another. Use cardboard to make building blocks that can be used to represent bricks, houses or buildings. Place these blocks in position over the fault line (where the two wooden boards touch one another). Now draw the boards away from one another or slide them past each other in opposite directions.



2. Explain what exactly happened to the blocks?
3. What are the names of the different parts of the earth's crust (represented by the wooden boards)?

4. What would you suggest for making buildings more Earthquake proof? Discuss this in your group and report your suggestions to the class.

Where do most earthquakes occur?

Earthquakes mainly occur at the margins of ground-plates, which is where these plates are slowly moving towards or away from each other. The movement causes earthquakes to occur in the countries that lie above the margins of the plates, while countries that lie towards the centres of the plates are not seriously threatened by earthquakes.

South Africa is situated in the centre of a ground-plate; therefore we may not necessarily experience very serious earthquakes. But the stirrings in the mantle of the earth's crust are noticeable in South Africa, as we have experienced in 1969 when an earthquake in the Boland caused much damage in Ceres.

In the next learning unit the map will show that earthquakes and volcanoes occur at the *same places*.

(See figure 8)

Activity 2:

To indicate on a map of the world in which areas earthquakes occur

[LO 2.1, 2.2]

2. The effect (consequences) of earthquakes on the lives of people and socio-economic activities

Read the magazine article that follows.

You are simply strolling down the street in the city or town where you live. Suddenly the ground around you starts to buckle and form waves like those that form in a dam into which a stone is hurled.

An awful droning, almost like a lamentation, rises from the earth. Around you buildings collapse like houses built of cards and the street in front of you is bursting open as if made of strips of soft, torn cardboard.

Railway girders bend and tear, bridges collapse, dam walls break. People and cars tumble into the enormous gaping cracks in the earth. The cracks close up again and everything disappears forever. Everywhere bricks, concrete blocks, beams and pillars fall down on people who scramble left and right for a place of shelter that cannot be found.

Fires break out because electric cables and gas pipes are broken. Water rushes from burst pipes.

Windowpanes lie shivered into razor-sharp splinters among the rubble, adding to the horror. A most dreadful natural disaster. Horror as humankind has known it since the earliest times. Earthquake!

Huisgenoot, Jongspan, 21 May 1987.

Such an earthquake is rated as a very serious disaster, but all earthquakes fortunately are not equally severe. There may be a tremor of the earth's crust every thirty minutes, but only about 500 of them are actually felt in any year. Fortunately those that do great damage and claim thousands of lives are few and far between.

Trace the world map from figure 8 and indicate only the areas where earthquakes occur. Then colour it in red.

Activity 3:

To discuss the consequences of earthquakes

[LO 2.1, 2.2]

1. Read the magazine article attentively. Form

groups for discussing the effects of earthquakes on:

a) People

b) Nature

2. Collect photographs, pictures and newspapers or magazine cuttings dealing with earthquakes. Bring it along to the class for a discussion session and use it to supplement the information in your notes.

3. Read the following paragraph dealing with Tsunamis and try to find pictures and additional information dealing with this natural phenomenon.

Tsunami – another result of earthquakes!

When rock on the ocean floor shifts unexpectedly, the overlying seawater is also affected and a gulf that can move at 800 km per hour develops. When the gulf reaches the shallower bays of coastal areas it is dammed up higher. It can reach heights of between 30 and 60 metres and can cause serious destruction by flooding and destroying harbours and towns along the coast.

3. Why some people are at a higher risk to be affected by tropical cyclones than others

If you look at the map of the world (figure 8 on p. 33) on which the ground-plates are indicated, you will notice that we find some of the world's most

densely populated areas in these danger zones. Should an earthquake occur, many lives could be lost.

In developed countries or regions like Europe, the USA and Japan an earthquake's damage can be limited and losses minimised. Buildings, bridges and roads are built to resist the effect of earthquakes. The infrastructure in such countries are highly sophisticated and their health care and medical services are immediately available in case of emergencies.

It is different, though, in developing countries. Many people die and constructions are easily destroyed. Buildings are usually erected in the cheapest possible way and cannot withstand the force of an earthquake. Thousands are left homeless, hungry and injured. The poor infrastructure prevents that aid reaches them soon enough. Corpses start decaying and drinking water is polluted, spreading disease which increases the number of deaths.

Activity 4:

To discuss the reason why people live in areas where earthquakes occur

[LO 2.2]

1. Why do people decide to live in areas where earthquakes occur? Take some time to think about this and then give your own opinion.
2. Where would you hide if an earthquake struck in your environment?
4. Precautionary measures: managing risk and reducing risk

Can earthquakes be forecast?

Unfortunately, this is not always possible. However, the earth's crust is intensively studied and sensitive instruments register the slightest movement in the crust.

Scientists use special methods and apparatus, e.g. seismographs, to study and forecast earthquakes. A seismograph can detect any movement in the earth's crust. When foreshocks occur scientists are able to detect activity in the earth's crust and issue warnings in time. Some satellites are also equipped to pick up movement in the earth's crust.

There are also other non-scientific signs in nature that, if observed in time, could help to forecast an earthquake, e.g.

- a sudden significant change in the level of

- groundwater (e.g. in wells);
- the sudden strange behaviour of animals.

If earthquakes could be forecast in time, warnings to evacuate the danger zones could be issued and so loss of life could be limited. Whether all people listen to such warnings is an open question.

Remember – not all earthquakes can be forecast. Some happen suddenly, without any foreshocks or other signs.

Activity 5:

To list emergency measures in case of an earthquake

[LO 2.3]

Imagine that you live in an area where earthquakes occur frequently (where there is a weak place in the earth's crust). Draw up a list of emergency measures that should be applied before, during and after an earthquake.

Copy the world map from Figure 8 and indicate the areas where earthquakes occur on your own map. Then use red to colour in these areas.

Assessment

Learning Outcomes(LOs)

LO 2

GEOGRAPHICAL KNOWLEDGE AND

UNDERSTANDINGThe learner will be able to demonstrate geographical and environmental knowledge and understanding.

Assessment standards(ASc)

We know this when the learner:

2.1 describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places];2.2 investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources];2.3 identifies how risks and hazards can be managed [people and the environment].

Memorandum

Activity 1:

1. Constructing a model

The teacher must provide two wooden planks of equal thickness and 7 - 9 building blocks made from cardboard. Follow the instructions as set out in Learning Unit 4, page 5, to carry out the experiment.

1. As the planks are drawn away from each other in opposite directions, the building blocks also start shifting. If the planks continue to move, the building blocks tumble down.
2. The two wooden planks represent two different layers constituting the earth's crust. See Figure 8.
3. See cutting on earthquakes and the design of buildings and insert here to serve as memo. Learners may also give their opinions. ** (See accompanying note for an answer.)

Activity 2:

Ask learners to trace the world map, using Figure 8. The teacher can also supply the learners with a world map (outline only). Learners indicate in red where earthquake areas are to be found on our planet.

Activity 3:

Many people die or are seriously injured;

Damages amounting to millions of rands occur;

Buildings collapse or severe damage is caused;

Tarred roads buckle and are ripped apart;

Bridges collapse;

Dam walls collapse or get damaged;

Fires break out because of electric cables and gas pipes that get damaged;

Power failures cause total blackouts;

Water streams from burst pipes and cause flooding and a shortage of fresh water;

Sewage pipes break and cause pollution, which cause health hazards;

Telephone connections are severed;

Mountain passes are blocked due to rock falls;

The country's economy is severely affected.

International aid is important for reconstruction.

1. b) Nature:

River courses change as a result of shifts in the earth's crust. Consequently the natural environment also changes;

Topsoil along the mountain slopes become undone and start sliding down the slopes. Human beings and buildings might be buried under the landslides;

The natural vegetation is therefore destroyed and it may take many years to recover. In the meantime the lack of vegetation on the bare slopes increases the chances of soil erosion.

Floods and destruction occur in low-lying areas if an earthquake has originated under the sea-bed, causing a tsunami.

1. Learners bring photographs, pictures and newspaper cuttings on earthquakes to the classroom. They discuss these, adding some of the points to their notes.

3. Tsunami's The Southern Asian tsunami of 26 December 2004.

Learners collect information on this.

See web page <http://iri.Ideo.columbia.edu-lareef/tsunami>

Activity 4:

1. Why do people live in these regions?

Earthquakes are not an everyday phenomenon. Some regions might experience an earthquake once in a lifetime. People therefore take a chance and hope that it will not occur again.

Many of the “endangered regions” are also important financial and industrial centres. There are many job opportunities and prosperity there. Financial implications are therefore important considerations.

Traditionally many generations have been living there (especially in developed countries) who do not move away easily.

2. What to do during an earthquake.

Advice is plentiful.

Leave the building immediately.

Move to the top storey immediately if you live in a high rise building so that the building does not collapse on you.

Avoid the lifts of tall buildings. You could be trapped in them.

Seek refuge under a concrete beam if available, otherwise under sturdy furniture such as tables.

Move to open fields immediately where there are no flying objects.

Activity 5:

1. Emergency measures before an earthquake

Listen to the radio or TV daily. If tremors in the crust of the earth are picked up, warnings will be transmitted immediately.

Always have a backpack ready containing fresh clothes, a blanket or warm clothing.

The following should also be included: a) fresh water

b) non-perishable foodstuffs

c) medicine

d) a flashlight

Always keep your personal documents ready.

2. Emergency measures during an earthquake.

Find a place of safety immediately or move to an open field.

3. Emergency measures after an earthquake.

Avoid snooping around in damaged buildings. Loose objects could fall and cause injuries.

Erect tent settlements for homeless people as temporary housing facilities until emergency personnel have completed their clearing up operations.

Erect temporary sewage and water supply points.

Erect temporary catering facilities.

Supply medical aid to people who have been injured.

Volcanoes

SOCIAL SCIENCES: Geography

Grade 7

NATURAL HAZARDS

Module 5

Volcanoes

1. The occurrence and causes of volcanoes

Molten rock below the earth's crust is called magma. When it flows to the surface it is called lava. Why lava flows to the surface is not clear enough for people to agree on the reasons for eruptions and no one has been able to investigate the heart of the earth to find out what happens there.

We do know, however, that the weight of the solid crust of the earth is so great that the fluid rock is forced upwards at weak places in the earth's crust. This molten rock is extremely hot, with temperatures of between 800 and 1 500 C.

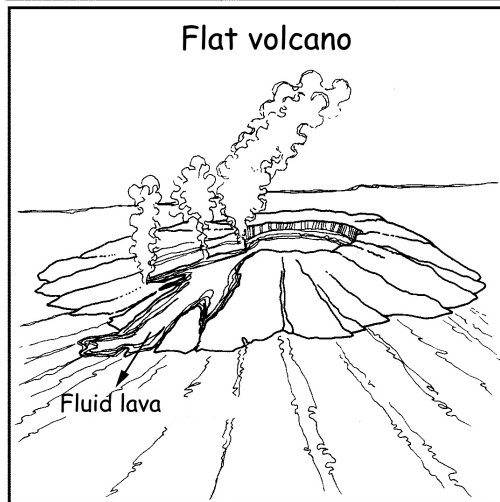
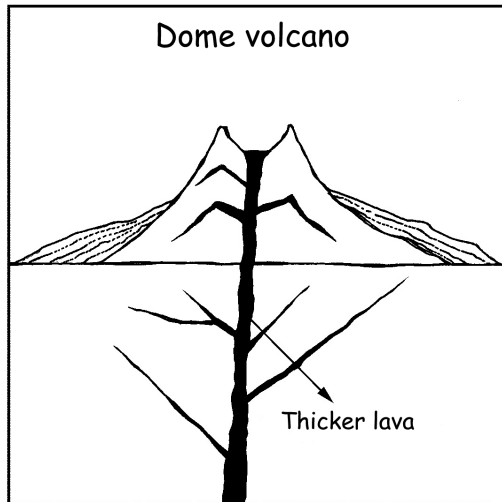
If you shake a can of cooldrink, the gas will propel the cooldrink out of the can with great force when you open the can. This is what happens in the case of volcanoes – the molten rock erupts through weak places in the earth's crust and lava, rocks and ash are propelled into the air.

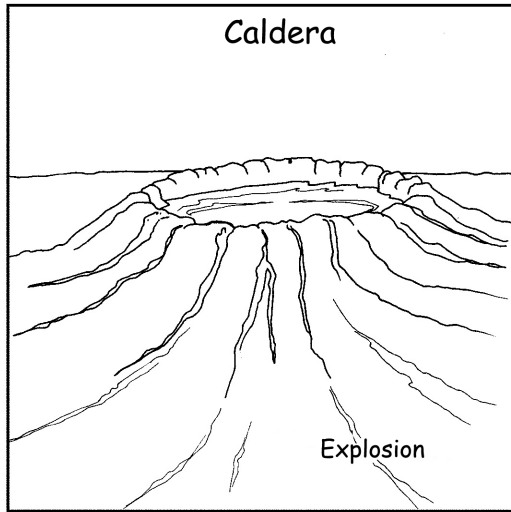
Then the lava cools down and solidifies to form new rocks known as *igneous* rock.

Some volcanoes produce very fluid lava that flows over a large area before solidifying. Thin plates of igneous rock are formed in this case. Other volcanoes build up domes because the lava is less fluid and does not flow far from the core.

A very forceful explosion can force out the whole of the dome and cause a large open hole called a caldera, or crater. There are roughly 450 active

volcanoes worldwide. Fortunately, they do not erupt continuously and are therefore referred to as dormant volcanoes.

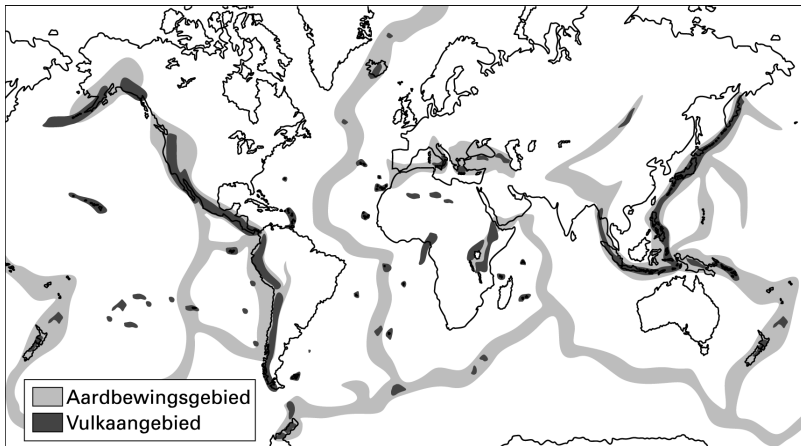




Where do most volcanoes occur?

Study figure 4.

There are about 5 000 volcanoes. They only occur in particular places. These places are situated above the margins of the large plates of the earth's crust. The movement of these plates lead to volcanic eruptions and earthquakes.



Quake areas Volcanic areas

Figure 4

The distribution of the main volcanic and earthquake areas of the earth

Which volcanoes have caused the greatest destruction?

The most destructive volcano of all time was Krakatoa, in Indonesia. When it erupted in 1883, more than 36 000 people died. The bang of the explosion was heard 5 000 km away and the pollution that resulted from the eruption was visible in copper-coloured sunsets across the earth for years.

Another well-known example of the destructive force of a volcano comes from the eruption of Mount Vesuvius, which buried the city of Pompeii in

the Bay of Naples under volcanic rocks and ashes in 79 AD.

2. The effect (consequences) of volcanoes on people's lives and their socio-economic activities

Thousands of lights glitter in the dark dome of the night. From a distance the explosions that hurtle glowing rocks and streams of fire into the night look like an expansive display of fireworks. Rocks and ashes flung up high pollute the air.

A river of red, smoking lava slithers over the edge of the crater – the warm blood of the living earth, as someone has strikingly described it.

It may flow through fertile valleys for kilometres, devouring every blade of grass, even trees, along its way. Houses crumble and cities are buried under the glowing, driven mass. People who have survived, scramble down the mountainside; warm ash raining down on them. Suffocating sulphurous gases and a rain of ashes smother other people to death.

Somewhere else on the earth, in the middle of the desolate open sea, a volcano forces its way to find its place in the sun and a new island is born. Tsunamis develop and they flood and destroy the low-lying land of bays and islands.

Death and birth. Below the drifting crust of our struggling planet lies a stirring world of molten

rock. In the process that has continued through the ages, it may erupt to destroy what lies above, but also, surprisingly, to create.

[*Huisgenoot se Jongspan*, 4 June 1987]

We have seen that volcanoes can also have positive effects. Solidifying lava forms igneous rock, in which precious stones like diamonds are created. Where this occurs, financial welfare follows.

Fertile soils are created when these rocks that originate from lava are eroded over millions of years and such soils nurture crops. In this way, the world is provided with food.

Hot water springs occur near volcanoes. These warm springs naturally become tourist attractions. In cold countries such warm water is even used to supply buildings with hot water and to heat them.

Activity 2:

To discuss the consequences of volcanoes on people and their environment

[LO 2.1, 2.2]

1. Discuss the article that is printed above in your groups once you have read it, to explain the effect of volcanoes on:

a) People

b) The environment

2. Collect pictures, photos and newspaper cuttings dealing with volcanoes. Bring them to class for discussion. Use the material you have collected to supplement your notes.

3. Why some people are at a higher risk to be affected by volcanoes than others

Disasters happen anywhere, but looking at figure 8 discloses that volcanoes occur more often in certain areas.

People knowingly settle in the vicinity of a volcano. Sometimes such an area is densely populated, as people regard work opportunities and prosperity as more important than a potential volcanic eruption.

As in the case of earthquakes, developed areas can handle the impact of a volcanic eruption with much more ease and efficiency. Warnings can be broadcast in time and evacuation carried out if necessary. After care services are available and lives are saved.

Where densely populated areas in developing countries are concentrated near a volcano, big problems are likely to develop. Communication systems are poorly developed and people are therefore not warned in time. Health care is poor and emergency services lacking. Fires cause destruction and loss of lives. After care services are insufficient and many people die because they cannot be helped in time.

4. Precautionary measures: the management of risk and reduction of risk

Scientists constantly study the world's active volcanoes and try to predict their behaviour. Sometimes they succeed, but mostly they do not. We are unable to see what happens in the depths of the earth's crust and for that reason emergency measures in volcanic areas are so important.

Activity 3:

To reflect on emergency measures in volcanic danger zones

[LO 2.3]

1. Why do people decide to live in areas where

volcanic eruptions occur? Take some time to consider this and then give your own opinion.

2. Imagine that you live in an area where volcanic eruptions occur. Draw up a list of emergency measures that should be applied before, during and after a volcanic eruption.

3. Collect newspaper articles on any recent volcanic eruption. Discuss it in class and name the consequences thereof.

4. What kind of aid was offered to these people by the rest of the world? Could more have been done?

an interesting fact

The enormous power that exists within the earth is frightening when you think of the death and destruction that is caused when it is revealed.

But it may be possible to think of it in a positive way: We can strive to learn to harness this power to make life on earth more comfortable. Perhaps ways of taming such power and applying it to produce electricity may be found. Think of the impact that such a source of energy will have!

A website like the following has interesting information about volcanoes in store:

<http://volcano.und.nodak.edu/>

Assessment

Learning Outcomes(LOs)

LO 2

GEOGRAPHICAL KNOWLEDGE AND

UNDERSTANDINGThe learner will be able to demonstrate geographical and environmental knowledge and understanding.

Assessment standards(ASc)

We know this when the learner:

2.1 describes and explains how natural hazards such as volcanoes, earthquakes and flooding occur, and their impact on human lives and socio-economic activities [people and places];2.2 investigates and explains why some people face a higher risk than others with respect to natural hazards [people and resources];2.3 identifies how risks and hazards can be managed [people and the environment].

Memorandum

Activity:

2. Trace the world map in Figure 4 and indicate the zones where earthquakes occur, in red.
3. Yes, they occur in the same areas where there are volcanoes.

Earthquakes and volcanoes go hand in hand and are found on the periphery of the plates of the earth's crust – there where the plates move slowly to or from one another. These movements cause earthquakes and/or volcanic eruptions.

Activity 2:

1. a) People

- Lava devours houses and cities or causes them to crumble.
- People are engulfed by the lava.
- People are smothered by the sulphurous gases and ash rain.
- People drown as a result of tsunamis that develop and flood low-lying land.

b) The environment

- The natural environment is destroyed completely, or changed by a volcano.
- Rocks and ash that have been flung into the atmosphere, causes pollution.

- Lava covers fertile valleys and destroys all the vegetation.
- Red-hot streams of mud engulf cities and people.
- Tsunamis develop in the open sea and flood low-lying land or islands.
- New islands are formed by volcanoes under the sea.
- The natural environment is transformed. Igneous rock is formed and eventually, over millions of years fertile soil is formed for food production.
- Precious stones such as diamonds are formed in igneous rock which has financial implications for a country.
- Hot water springs occur near volcanoes and become tourist attractions. The warm water is also applied to heat buildings.

1. Learners collect pictures, photos and newspaper clippings of volcanoes and bring them to the class for discussion.

Activity 3:

1. People make an actual decision to live close to a volcano.

Economic considerations such as the availability of jobs and financial prosperity are often more important than the potential danger of living close

to a volcano.

2. a) Before a volcano erupts:

Volcanoes are monitored by seismographs and warnings are issued.

Areas should be vacated if early signs are observed.

People living in such areas must ensure that they always have emergency supplies at hand.

b) During a volcanic eruption:

People must leave the area immediately.

Always listen to news broadcasts to follow the course of events.

Wear gas masks as prevention against sulphurous gases.

c) After a volcanic eruption:

Cleaning up operations must take place in the area and relief funding must be supplied by first world countries.

3. Collect newspaper clippings on any recent volcanic eruption and discuss it in class.

4. First world countries supply financial aid after

such a disaster.

They also dispatch emergency teams to help with clearing up operations, medical services and food supplies.

The effects of population growth and change on the lives of people

SOCIAL SCIENCES: Geography

Grade 7

POPULATION GROWTH AND CHANGES

Module 6

The factors that influence growth and change

1. Definitions (to ensure that we all understand

exactly what we read)

- The word **demography** refers to a statistic description of the population (the number of people living in a specific area). The word is of Greek origin, in which **demos** refers to **the people**, and **graphy** to **description**.

Demographers don't guess – they calculate! They use scientific knowledge to predict the possible effects and outcomes of population density.

Demography is an important field of study, as future planning often depends on whether the population is on the increase or on the decrease. To make a sound decision about e.g. where a dam is to be built, and when, the planners should seriously consider the population growth – the rate at which the population is either shrinking or growing. The planning of a new dam cannot wait until a particular area actually experiences a water shortage!

Similarly these planners might establish that a dam is not a good idea, for instance where the population is either decreasing, or remains constant.

Some of the important studies undertaken by demographers include determining the population of a country (or area) in relation to the future availability of resources such as water and the production of food and raw materials for industries

(which also means work opportunities for the inhabitants). Demographic information is therefore an essential tool for planning the future.

Populations are subject to all kinds of changes that occur in the course of time. If the population consists mainly of young people, it is referred to as a young population. But a population could also “age”. When populations experience changes, usually from “young” to “old”, we speak of demographic change.

- **Statistics** refers to the science or method of collecting data on mass phenomena (such as population, the country’s exports, etc.), and expressing it in numbers or figures.
- The **life expectancy** of human beings refers to the average age that any particular person is likely to reach according to calculations. A baby born into a community with ample resources and good health care, has a higher life expectancy than that of a baby born in a poor country where health care hardly exists. The big difference in the number of older women as opposed to older men in any South African community, shows that women in South Africa (and in the rest of the world) enjoy a longer life expectancy than men.
- **Population** could refer to the total number of inhabitants of any country, or that of only a

small group, a city, an area, province or district. Groups (populations) can change in various ways, and change is in fact an ongoing process.

- **Urbanisation** refers to the process where people move to cities and towns (as opposed to those remaining in rural areas where they live in a scattered fashion).
- The use of a population pyramid is an easy way of depicting the population of any given area. The horizontal lines indicate the **percentage** of the population in the various age groups – divided into the two gender groups. The different age groups are stacked on top of each other. This makes it possible to obtain a very accurate total picture or image of the population at a glance.

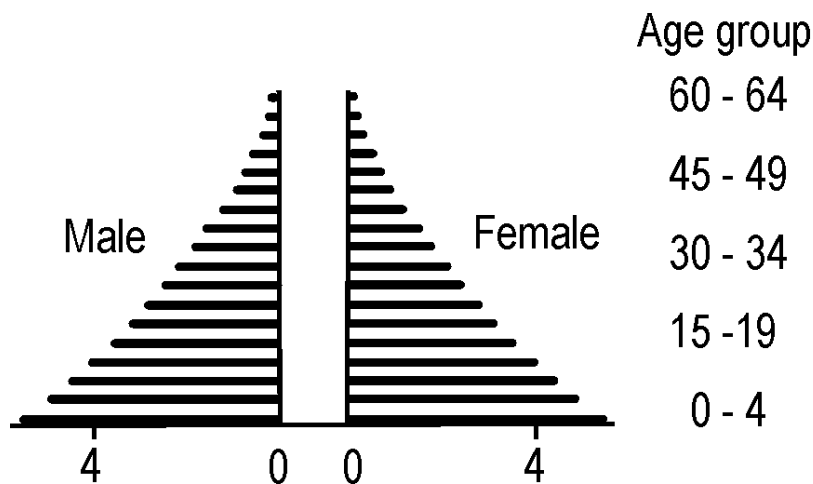


Figure 1 above represents a very “young” population. The vast majority are under 20 years of age, which also

means that the population growth will be very high.

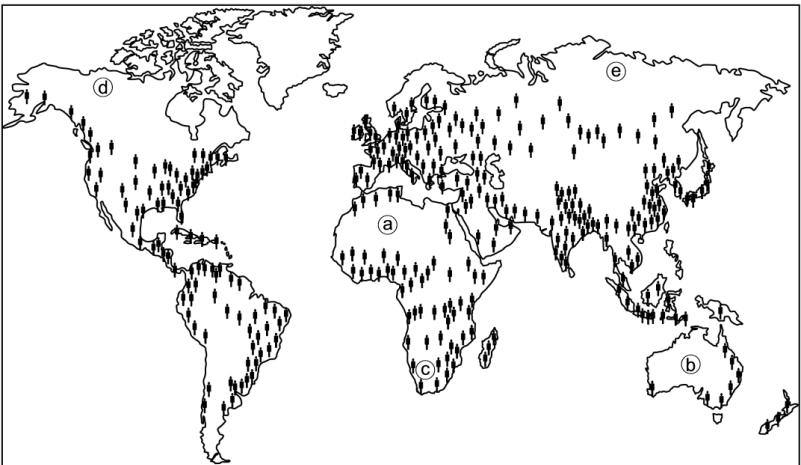
2. The population distribution across the globe

Activity 1:

To answer questions about the distribution of the world population

[LO 1.5]

- The world population is not distributed evenly. **Why not?** Study the world map [fig.2, population distribution] and other maps in your atlas, and **answer** the questions that follow



- a) Why is the population so sparse at **a**, **b** and **c**?
- b) Why would the population at **d** and **e** be equally sparse?
- c) Does the Amazon River in Brazil have anything to do with the population density in that country? (Explain)
- d) Explain the reason for the densely populated area in the north-eastern corner of Africa.
- e) Would you say that the whole of Australia has become urbanised?

The world population is not distributed evenly across the globe – in some parts the population is very high, while in others it is rather low. The reasons for this may vary from region to region, and from country to country. In the same way the population structures (with regard to e.g. age distribution) might also vary – one area would have an “old” population, while another would be regarded as “young”. Also, these characteristics of the population do not remain static – some regions could experience depopulation, while others might experience rapid urbanisation. In the same way a population could within 50 years possibly change from “young” to “old”. Could you think of any nearby town or village having either a “young” or “old” population? Why would that be? Has it already changed, or is it likely to change in any

way, and why?

3. Population structures

This young population as depicted by means of the population pyramid in figure 1 on p. 5 was that of England and Wales in 1881. Fifty years later the picture looked quite different, and after a further fifty years it showed even more change. This type of change is called **demographic development**.

Important features of a population represented by means of a typical pyramid (having a broad basis), are (a) a high birth rate, (b) a high death rate, (c) short life expectancy.

The increase in the population of any group (a country or community) is calculated by means of the following formula:

$$Pg = B - D (+ \text{ or } - \text{ net migration})$$

Pg is the **P**opulation **g**rowth

B is the **B**irth rate

M is the **D**eath rate

imigrants are **a**dded

emigrants are **d**educted

Activity 2:

To make inferences about population increase

[LO 3.2]

a) Is it possible that the **Pg** does not show an **increase**, but a **decrease**? Motivate your answer.

3.1 Is the new baby going to be a male or female (a boy or a girl)?

We take it for granted that an equal number of boys and girls are born in a **big community** or **country**. This means that in big, co-educational schools, one would usually find a more or less equal number of girls and boys. A drawing of the school's "population pyramid" (watch out: it will *not* be shaped like a pyramid, but could you explain why?) would therefore be **symmetrical**.

But this is not always the case. Have a look at the following:

b) Which country's population pyramid differs the most from Germany's?

	Male	Female	Male
USA	95	100	
Japan	94	100	
Germany	91	100	
China		100	106
India		100	107

Activity 3:

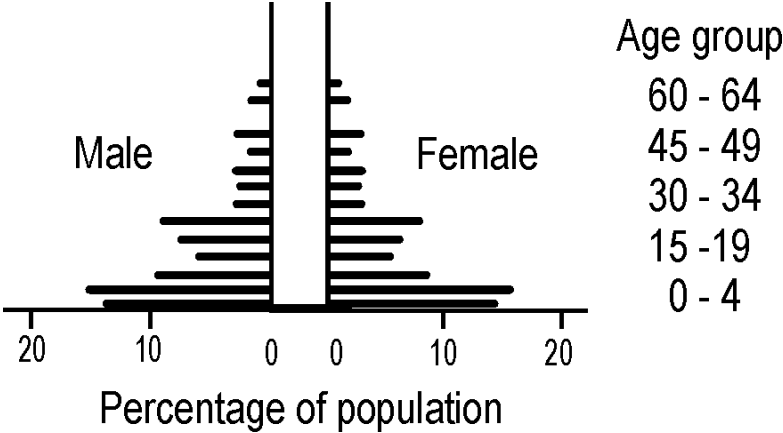
To represent the differences in particular populations in pyramids

[LO 3.2]

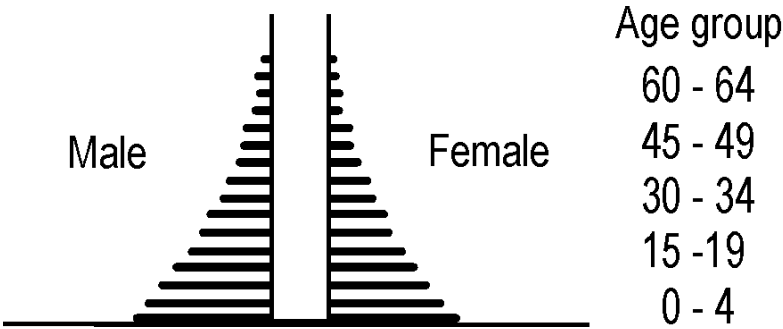
- When births and deaths follow their natural course in any community, and if there is no marked increase or decrease in numbers due to migration, the population structure is reflected as a “normal” pyramid, as in Figure 1. By now you already know it.

Within these normal communities with their “normal” pyramids, it might happen that cultural, social and economic factors change the composition of the population regarding age groups and gender. In this event the shape of a pyramid representing a particular community will begin to deviate from the norm. If a few thousand Turks leave Turkey

annually to go and work in the city of Munich, the population structure of the Turkish territory, as well as that of Munich, will also change in due course.

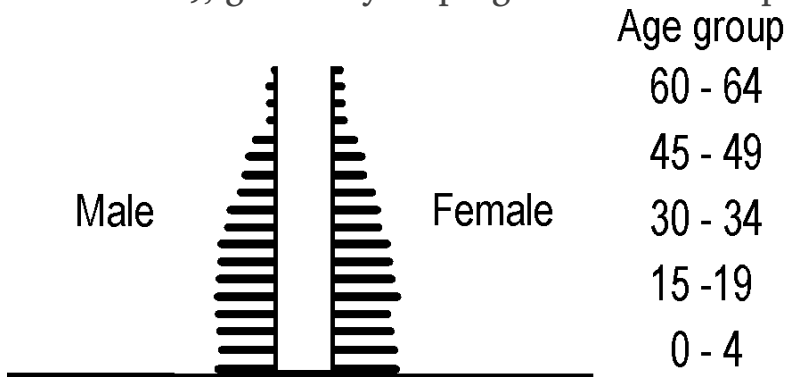


1. The pyramid for communities with a **high birth rate, high death rate** and a **short life expectancy**, will still be shaped like a “normal” pyramid, but the top will be lower and the pyramid will show marked indentations on the sides.

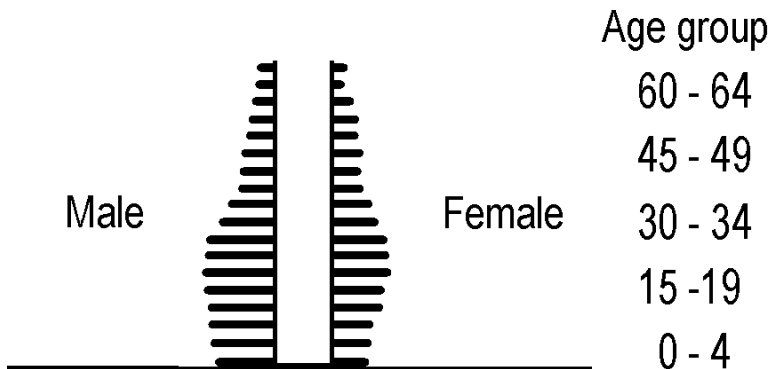


- b) The pyramids for communities and populations with a **low birth rate, an equally low death rate** and a **long life expectancy** (an affluent society

enjoying a good quality of life and medical care), will have a relatively narrow basis (narrower than the one above), gradually sloping towards the top.



1. Only primitive communities (those in an early stage of development) have a **high birth rate** as well as a **high death rate** (the birth rate being the highest). This results in a rather rapid growth in the population



1. The populations of developed countries (e.g. most of the Western European states) have a **low birth and death rate**. In some instances the birth rate is even lower than the death rate,

resulting in a negative population growth. The life expectancy is high. In this case we refer to an “old” population.

Please note: The percentages on the horizontal lines are not the same for the four pyramids.

4. Why do changes in population occur?

In the long history of the world, most **changes** that took place related to **growth** only. Human beings simply continued to increase all over the earth. But this no longer holds true for all parts of the world. In some European countries the population is in fact **shrinking** (decreasing, becoming smaller).

And if you were under the impression that only (very) rapid growth in certain countries or areas cause problems, you'll have to think again, for a decrease in the population can be equally problematic! In these instances people only have to cope with a different set of problems.

But before we pay attention to the effects and challenges of change, we have to establish why these changes occur in the first place.

Although it has already been said that some countries experience a decrease in their population, the major changes are mainly due to population increase. On the whole, the world population is actually **growing**.

. It is apparent the world's population was once very small, it is also very clear that growth did not take place at a steady rate – it seems to be growing faster all the time! And this rapid growth causes some of the biggest challenges that governments have to face.

Any change in numbers have a bearing on human beings. When a baby is born it involves certain changes for the family. If it happens to be twins or triplets, the effects are even bigger. Space might become a problem, the grocery bills go up; families who own a car, suddenly find the car much too small, and so one could go on naming the effects of an increase in numbers.

The (rapid) growth in the population of a village, city, region or country, confronts governments with new challenges – whether on a municipal, provincial or national level. In the same way that the head of a family must make immediate adjustments when the family expands, the municipality has to do the same.

Activity 4:

To discuss in groups the challenges for municipalities arising from increases in the population

[LO 3.1]

a) Divide your class or workgroup into two – one group choosing a **village**, and the other a **big city**. Discuss whatever challenges the municipality would have to face if the population (inhabitants in this case) were to **double in five years' time**.

- Now that you have completed **Activity 4**, you most probably realise that a change in the population is not to be taken lightly! The change that you have focussed on in Activity 4, was population **growth** or increase, a matter which is not difficult to understand. Please remember that a doubling of the population in any municipal area within a period of ten years is very high, and rather exceptional. An influx of people to a smaller area inside a large municipal area would be more likely.
- However, a change in the population involves much more than an increase or decrease!
- Populations might also “**age**”, or even become “**younger**”; the **lifeexpectancy** of the inhabitants might grow **higher**; the **death rate** might drop; the **fertility** might **increase**, and so forth. Changes of this nature do not come about on their own – one change leads to another, e.g. if the **mortality ratedrops**, the **life expectancy is raised**. Similarly, the population or community will become **younger** when the **fertility** of the inhabitants increases.

Also keep in mind that this is a **slow** process; these changes take place over a **long period of time!**

- You should also realise that, when large numbers of people move (relocate) to a different area, not only does it affect the area where they arrive – the population in the area which they have left behind also changes! If a very large number of young men from any community leave the area **permanently** to go and find jobs elsewhere, the structure of that community will undergo change. The community which had been abandoned grows “older”, *and* the percentage of younger women becomes higher. Eventually the younger group becomes the older group, while the male group will remain smaller than the female group.
- All changes occurring on the long term, but continuously, are referred to as **demographic change**.

5. Cause and effect

We have now established that changes do not occur at random – one change brings about another. You probably know the concept of **cause and effect**. At this stage it should be great fun to think and chat about cause and effect. Argumentation is nothing new to you; after all, you are in Grade 7!

Activity 5:

To choose the best options with regard to population changes

[LO 3.2]

CHOOSE THE BEST OPTION

Underline the correct answer from the words in brackets:

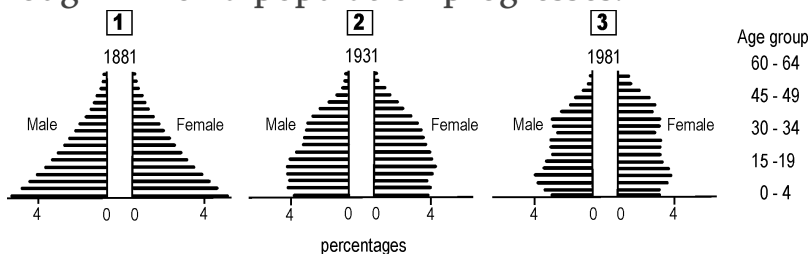
1. As the fertility in any community increases, the births in that community will (decrease/increase).
2. Good medical care for the entire community normally leads to a drop in the (death rate/life expectancy).
3. If the mortality rate in a [primitive] society is very high, the birth rate will definitely be (high/low).
4. When any society is used to receiving state benefits for the aged, families will tend to get (smaller/bigger).
5. A population with a high fertility rate and a low mortality rate, will (shrink/grow).
6. The population of any country that is severely

affected by the Aids-pandemic, will experience a drop in (fertility/life expectancy).

At the moment the **developing countries** are experiencing a rapid growth in their population, so that the population pyramid in each case shows a typically young population. **Developed countries**, such as almost all of the European states, the USA and Canada, once experienced times when the population could be described as young. These states have since undergone demographic change.

6. Demographic change, and how it can be represented by means of population pyramids

Here we have a description (a history in a certain sense) of the population structure of England and Wales. This is a good example of the different stages through which a population progresses.



Population pyramids

Over the centuries the population has remained relatively constant. The birth as well as the mortality rate was high, and the life expectancy short. The pyramid of this group probably

resembled the one in Figure 1(a) at the beginning of this learning unit.

1. After the changes effected by the agricultural and industrial revolutions when farms started to produce more food due to mechanisation, and people turned to factory jobs for an income, the population showed a marked growth. The birth rate gradually started to overtake the mortality rate because of better nutrition, improved medical care, and better sanitation. As before, families were still quite large, but as fewer babies and youths died, the total population took on a “young” character.
2. Fifty years later the population pyramid showed a marked difference from the previous pyramid. A lower fertility rate then caused the younger part of the population to shrink proportionally. The lower fertility rate was due to the fact that women were prepared and chose to have fewer children, as they preferred to join the workforce to help earn an extra income for their families. Moreover, the state took on the responsibility of caring for the aged, which meant that they were no longer dependent on their children. (In earlier times children were regarded as an “insurance policy for old age”.)
3. In 1981, another 50 years later, this particular group was already an “old” population. Place a ruler

across the three pyramids above, allowing only the groups of 65 years and older to be visible. You will clearly notice how much bigger this group has become since 50 and 100 years earlier. It is also clear that the births (fertility) dropped even further, for between 1931 and 1981 birth control had become standard practice.

Activity 6:

To discuss a newspaper report and make inferences

[LO 3.1, 3.3]

GROUP WORK

Work in groups of two or three and complete the following assignment:

Carefully read the newspaper report below, discuss it and talk about the questions before answering them:

CONCERN ABOUT GERMANS WANTING NO MORE CHILDREN

BERLIN - The fact that Germans are no longer keen on having children, is causing a big headache for politicians and employers in the largest European economy.

The United Nations predicts that the German

population of 82 million will drop to 70,8 million in 2050. A study by Germany's federal institute for demographic research has found that 26% of the men and 15% of the women between the age of 20 and 39 do not wish to start a family, compared to 12% of the men and 10% of the women in 1992.

According to this study there is a “growing conviction (under Germans) that having children is no ideal lifestyle.”

With its rapidly aging population, Germany is also setting itself apart from its European neighbours in other ways. German women prefer to have an average of 1,7 children, compared to two children per family in other European countries. The study also shows that 83% of the respondents regard the lack of a partner or a stable relationship as the main reason for not wanting to have children. Almost 60% said that concerns about the future awaiting their children, have persuaded them to remain childless. – (Sapa – AFP)

Translated from Die Burger, 16 May 2005

a) “German women prefer to have **an average of 1,7 children**, compared to at least two children per family in other countries.” How does this work? Can anybody have 1,7 children?

b) Women in other European countries (outside Germany) prefer to have two children. What

influence would **two** children per family have on a country's population in the long run?

c) Think of at least two reasons why a country would have a problem if its citizens no longer want to have children.

d) Give two reasons why Germans do not want to have children.

e) Germany already has an “ageing” or “old” population. Draw population pyramids for Germany – (a) depicting the present situation and b) what it will probably look like in 2050.

Assessment

LO 3

EXPLORING ISSUESThe learner will be able to make informed decisions about social and environmental issues and problems.

We know this when the learner:

3.1 identifies challenges to societies and settlements, with focus on population growth and change [identifies the issue];

3.2 identifies the factors that contribute to population growth and change [factors affecting the issue];

3.3 identifies processes that affect population growth and change in various places [factors affecting the issue];

Memorandum

Activity 1:

a) Hot deserts

b) Ice deserts

c) The Amazon opens up the interior; people settle along the river and its important tributaries.

d) Due to the presence of the Nile (in the surrounding desert region).

e) Australia is urbanised, most people live in towns and cities.

The map indicates such a distribution.

In Australia between 85% and 90% of the population lives in the cities and larger towns.

Activity 2:

a) If fewer births and deaths occur, it could lead to a decrease, but also when more people emigrate than babies are born.

b) The pyramid representing India will differ the most.

Activity 4:

The purpose of this activity is to inform the learners that a drastic increase, for example a doubling of population in a short period of time, might have serious consequences for any government – local, provincial or national! After the exercise the learner will also realise that the problems in towns and cities could be the same. Only the extent of the problems are different.

Water supply

Electricity supply

In many cases the delivery of services, that are planned in advance, will “collapse”.

Sewage

Building roads and streets

A shortage of new houses will occur

Employment will be a problem

Schools must be built (not primarily the function of local government).

Crime will increase, etc.

Activity 5:

1. increase
2. death rate
3. high
4. smaller
5. grow
6. life expectancy

Activity 6:

a) This figure was determined when the preferences of a group of women were added together and the average was determined.

b) Two children per family results in a population that does not grow (remains static), because the births cancel the two parents when they eventually die.

c) Who will do the work (many kinds) one day?
(Workers from elsewhere is not the ideal solution!)
Houses, schools, etc. will fall into a state of disrepair
because they will not be occupied.

d) The Germans are concerned about the future. A
lack of a partner or a stable relationship was stated
as reasons.

a) This pyramid will closely resemble the one in
figure 3(d) b) This pyramid will closely resemble the
one in figure 3(d), but the learners will demonstrate
insight if the bottom depicts a marked smaller
proportion (thinner). e)

The effects of population growth and change on the lives of people

SOCIAL SCIENCES: Geography

Grade 7

POPULATION GROWTH AND CHANGES

Module 7

The effects of population growth and change on the everyday lives of citizens

In the previous learning unit you became

acquainted with concepts such as a **young population**, the **ageing of the population**, **life expectancy**, **population structures**, etc. All of these are linked to the change and growth in any population. Another two concepts which are closely associated with this matter, include **urbanisation** and **population movement** – two types of change taking place in South Africa and the rest of the world at this very moment, both of which you should be able to observe quite easily. Population movement is commonly known as **migration**.

1. Why do people migrate?

Since the beginning of time, mankind had been wanderers, abandoning their home environment in search of places where they hoped to find more favourable living conditions; only in the event of forced removals, they had no choice.

Permanent migration is mainly influenced by the following:

climate: (pleasant temperatures – between 10°C and 30°C – and a comfortable humidity factor);

economics: (people move to places where they can earn good money, irrespective of the climate);

political reasons: (government decisions might cause people to move to or from a specific area).

But a further choice remains: **city** or **country** life?

Most of you are living in a city or a big town. It is a fact because more than half of our country has become **URBANISED**. This means that more than 50% of our country's inhabitants are presently living in big towns or cities.

[These figures are established by means of **census** surveys.]

Population distribution maps show that people are more attracted to some areas than others. This is also true of our own country. Only since 50 years ago the biggest part of our population was concentrated in and around the cities and big towns. In South Africa the migration from **rural** to **urban areas** is still an ongoing process.

Activity 1:

To discuss questions on population density and urbanisation

[LO 1.2]

Study the maps in your atlas that indicate population density distribution in urban areas before you attempt to answer the following questions:

	<p>Section A (This section is intended for learners in adjacent desks, or for small groups.)</p>	
--	---	--

- In the **South African context**, think of reasons why people

a)

MIGRATE within the country itself:

b) **EMIGRATE** from our country:

c) **IMMIGRATE** to our

country:

Section B (In this section the answers of each group are written on the board – all answers given by the first group, followed by any **new** answers from the other groups.)

- Now have a short class discussion and see if you can agree on the (three to five) **most important reasons for interior migration** (within the country itself) in South Africa. List them below:

2. Why do so many people prefer to live in cities?

You already know that urbanisation is a world-wide phenomenon. As the world's population continues to increase, the demand for housing keeps growing. Housing needs are particularly high in urban areas, because most people want to live there. Cities and major towns are getting bigger and bigger, while smaller towns become deserted.

Some states and island states such as Singapore and Bermuda have become 100% urbanised. Monaco, a small state bordering on the Mediterranean Ocean, is also 100% urbanised. In fact this state is a city in itself!

Activity 3:

To establish where people prefer to live – in cities or in rural areas

[LO 3.3]

- The phrases below are listed in alphabetical order – some of them indicating a preference for **not living in rural areas**, others pointing towards the **attractions of urban life**. The migration to big towns and cities brings about two processes at the same time: a **depopulation of rural areas** and an increased population of the urban areas (**urbanisation**).

Assignment:

Write a **D** next to phrases referring to the depopulation of rural areas, and **U** in the squares next to the phrases highlighting the attractions of city life.

(a)	Factories offer many work opportunities
(b)	Shortage of hospitals
(c)	Enough good schools and short distances to and from school
(d)	Higher salaries and wages in general

(e)	Big variety of entertainment and recreation available
(f)	Big variety of job opportunities available
(g)	Easy to change jobs
(h)	Children mostly far from schools
(i)	Mechanisation leads to fewer job opportunities
(j)	Problems with travelling due to a lack of public transport
(k)	Ample choice of public transport
(l)	Wages too low in some cases
(m)	Too quiet for those who prefer company
(n)	Sufficient health services and hospitals
(o)	Limited job opportunities in small towns

3. Causes and effects of the widespread interior migration in S.A.

Study the four newspaper reports dealing with the main causes and effects of the current migration between the Eastern and the Western Cape.

WCED IN FINANCIAL CRISIS DUE TO INFLUX OF CHILDREN FROM OTHER AREAS

Jorisna Bonthuys

CAPE TOWN - The influx of thousands of learners from other parts of the country to the Western Cape is responsible for the overcrowding of schools, as well as the financial problems experienced by the Department of Education.

At least 33 000 of the approximately 900 000 learners in the Western Cape come from other provinces. Many of them are from the Eastern Cape.

Apart from the WCED's annual budget of R4,2 billion, another R800 million is needed. Although 58 schools have been built since 1995, there is a shortage of up to 2 500 classrooms (at 81 schools) to meet the learners' needs.

The provincial Minister of Education has said that it is impossible to obtain the additional amount of money. According to the minister the present budget is insufficient as it is. Although education authorities had been making provision for the arrival of these learners, the big increase in numbers has surpassed all expectations.

According to the principals of fourteen high schools in the Khayalitsha area, over 3 000 extra learners turned up, while about 2 000 learners have not yet

registered.

Experts assume that the Gauteng Education Department is probably experiencing similar problems. "Urbanisation is a worldwide phenomenon. Learners go where they expect to find the best tuition. It is the same everywhere, from Riversdale, Saldanha and Delft to Stellenbosch. As soon as people get to hear about possible job opportunities, they simply migrate in that direction," it is said.

At the Bloekombos Primary School, the only school in the rapidly expanding Kraaifontein, up to 150 children are crowded into a single classroom, with three teachers teaching different subjects at the same time.

Translated from *Die Burger*, 21 February 2001

WESTERN CAPE BRACES ITSELF FOR 48 000 NEW RESIDENTS

Theuns van der Westhuizen

CAPE TOWN - The Western Cape Government and municipalities will have to build at least 12 000 new homes, 12 primary schools, 6 high schools and 2 or 3 new clinics per year to satisfy the needs of people who move in from other provinces.

And this situation is not likely to change in the near

future. It would therefore be better to act proactively, the minister of the environment, development and planning has said.

He referred to the findings of a survey on migration patterns which had been conducted for the Western Cape government in 2001, and which was mentioned by the prime minister in his opening address in the provincial parliament.

The study showed that about 48 000 people annually relocate to the Western Cape from other provinces – mainly from the Eastern and Northern Cape.

Translated from *Die Burger*, 27 February 2003

GOVERNMENT ANNOUNCES EMERGENCY PLAN AFTER CAPE FLOODS

Anesca Smith

CAPE TOWN - With almost 15 000 Capetonians left homeless since Thursday due to the flooding rains, the provincial government will today launch a three day emergency plan in the Cape metropole.

This was announced yesterday by the Western Cape minister of local government and housing, Mr Marius Fransman. At least 2 796 squatters' shacks in 28 informal settlement areas have been flooded between last Thursday and this Monday. About 155

mm of rain fell during that period.

Fransman and the prime minister, Mr Ebrahim Rasool, the national minister of housing, Ms Lindiwe Sisulu, and the mayor of the unicity, Mrs Nomaindia Mfeketo, will today visit one of the areas, Wallacedene near Kraaifontein.

Food and clothing will be distributed to the residents. At 13:00 they will also address a meeting in the Oliver Tambo hall in Khayelitsha to listen to residents' grievances regarding housing.

Fransman also called upon the public to donate warm clothes, blankets and food to non-government and welfare organisations such as the Red Cross, who will then distribute the donations to the flood victims.

About 320 000 people in the Western Cape are presently waiting for houses, Fransman said. It is estimated that 48 000 people migrate from mainly the Eastern Cape annually.

According to Fransman there are hundreds of people living in low-lying, "high risk" areas who will eventually have to move. "We must make sure that no houses are built here," he said.

Translated from: *Die Burger*, 11 August 2004

MIGRATION FROM THE EASTERN CAPE BECOMES

A CRISIS

Carien du Plessis

MTHATHA - Migration from the Eastern Cape to Cape Town is reaching critical proportions, the city manager of the Cape Town City council, Dr Wallace Mgoqi, has said.

Over 20 000 families or heads of families per year are leaving the province to find jobs in the Western Cape, but there are no houses and the city council can build only about 11 000 houses per year. Cape Town is already experiencing a backlog of 42 000 houses.

The migrants do not leave the province on a permanent basis.

Mgoqi said many of them return to their families within the first six months.

Mr Gcobani Maswana, spokesman for the Eastern Cape department of social development, said the migrants also return when they fail to find jobs or when they start to notice aids symptoms.

The migrants who return to the Eastern Cape then apply for disability grants, causing them to rely heavily on the already overburdened welfare system. The department is presently revising 78 000 of these applications, as many of them are false.

Mgoqi said the Cape City Council has now come to realise that this is a mutual problem. Last week the city council signed an agreement with the O.R.Tambo District Municipality and the University of the Transkei to help curb this type of migration.

According to the agreement, the first of its kind between the two provinces, these three bodies are planning to exchange information, especially about economic development, to improve services for their citizens. Tax benefits are already being planned for industries providing jobs for locals in the Mthatha area.

Mgoqi said these plans will take shape within the next month.

He also referred to the enormous potential for development, especially in the tourism sector.

Much more should be done to enlarge the capacity of this rural municipality in respect of housing, services and jobs. All state departments must join hands to help.

Maswana said the main cause of migration is poverty.

The Eastern Cape government has set aside funds for public job creation programmes that offer people the opportunity to acquire skills.

In addition, the provincial government has a growth and development programme teaching people how to plough and plant food in order to make them self-sufficient.

About 1,8 million people live in the O.R. Tambo district municipality and the Western Cape will not be able to absorb all these people unless actual steps are taken to prohibit migration. “Very few people realise the seriousness of the situation. This is a time bomb,” Mgoqi said.

Most of the migrants to Cape Town come from the Eastern Cape.

Mgoqi said many of them come from neighbouring countries and then migrate as far as Cape Town.

Translated from: *Die Burger*, 11 August 2004

4. The population of the Western Cape is growing very fast, especially in and around Cape Town

Activity 4:

To discuss the problems around migration

[LO 1.6]

a) Newspaper report no. 4 mentions the main reason for migration. Copy that particular sentence in big letters in the space provided below.

b) Three of the most important problems confronting the government are mentioned in reports 1 to 3. Describe each of these problems in a sentence or two.

c) In report 4 we read about the agreement between the municipal authorities of the City of Cape Town and the O.R. Tambo district municipality in the Eastern Cape. These two authorities understood the problem and made a joint effort to find a solution. In your own words, say what they (1) identified as the problem and (2) how they intend to solve it. (3) Give your own opinion on this approach to the problem. Is this a good or a bad idea? Why?

d) What is the underlying reason for the large-scale permanent migration of people who leave the Eastern Cape to settle in the Western Cape?

2.2 But what about the Eastern Cape? Doesn't the loss of a large section of its population affect the Eastern Cape?

A lot of attention has been paid to the effect of new residents pouring into the Western Cape. You have just completed an assignment on the reasons for and the solutions to this problem. And you have taken note that dealing with this challenge is not the sole

responsibility of the Western Cape! What is the key word to the solution? (c.....)

Now we are going to look at the effects on areas which had been left behind by so many people.

Activity 5:

To list the effects on community life

[LO 3.2]

b) Churches:

c) Retail:

d) Job availability:

e) Municipal services:

Now decide if such a major loss of inhabitants as an advantage (+) or disadvantage (-) for the area, and write the appropriate symbol in the square provided.

Assessment

--

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and statistical sources [works with sources];

1.5 uses information to suggest answers, propose alternatives and possible solutions [answers the question];

1.6 reports on the inquiry using evidence from the sources including maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].

LO 3

EXPLORING ISSUESThe learner will be able to make informed decisions about social and environmental issues and problems.

We know this when the learner:

3.1 identifies challenges to societies and settlements, with focus on population growth and change [identifies the issue];

3.2 identifies the factors that contribute to population growth and change [factors affecting the issue];

3.3 identifies processes that affect population growth and change in various places [factors affecting the issue];

3.4 suggests ways of responding to issues associated with population growth and change in a particular context [makes choices].

Memorandum

This learning unit has been designed not only to enable learners to understand migration, but also to cultivate an understanding of the people whose lives have been affected most by the phenomenon.

A grade 7 learner cannot be expected to display the insight and decision making skills of an adult. Rather concentrate on cultivating a comprehension of problematic situations instead of looking for solutions.

Activity 1:

- The Karoo and the North Western Cape (a part of Namaqualand)
- Gauteng

Activity 2:

Section A

- the movement of people

- people who leave the country

c) people who enter the country

Section B

People are looking for a better life (*).

Workers are transferred to work elsewhere.

Workers apply for another job and must then move.

People retire and then settle elsewhere.

People return to areas that were taken from them under the previous political dispensation.

(*) Probably this is the most obvious phenomenon in South Africa, and will be discussed in greater detail later in the module.

Activity 3:

The D represents the powers that cause people to leave rural areas, whereas the U represents the attractions of city life. **Where do people want to live?**

--	--	--	--	--

(a)	Factories offer many work opportunities	U	
(b)	Shortage of hospitals	D	
(c)	Enough good schools and short distances to and from school	U	
(d)	Higher salaries and wages in general	U	
(e)	Big variety of entertainment and recreation available	U	
(f)	Big variety of job opportunities available	U	
(g)	Easy to change jobs	U	
(h)	Children mostly far from schools	D	
(i)	Mechanisation leads to fewer job opportunities	D	
(j)	Problems with travelling due to a lack of public transport	D	
(k)	Ample choice of	U	

(l)	public transport Wages too low in D		
(m)	some cases Too quiet for D those who prefer		
(n)	company Sufficient health U services and		
(o)	hospitals Limited job D opportunities in		
	small towns		

Activity 1:

a) PEOPLE LOOKING FOR A BETTER LIFE

or

PEOPLE WANT TO ESCAPE FROM POVERTY

b) (1) Presently there are hopelessly too many learners for the schools.

The WCED cannot keep up with building new schools.

1. The migration patterns are not going to change.

(3) People are erecting shacks in places that are not suitable for building.

In winter the living conditions of people in squatter camps (informal settlements) are critical.

c) (1) Poverty and poor living conditions due to a shortage of job opportunities are the main reasons.

- The improvement of living conditions of the people of the Eastern Cape is their main purpose. This will be achieved if more jobs are created and ways are found to make the people self supporting.
- Most learners will probably recognise that it is a good plan. What they must realise is that the plans must be sustainable.

d) POVERTY

Activity2:

a) Schools become empty, or if schools were over utilised, conditions would improve.

b) Church members leave, and churches struggle to meet their commitments.

c) There are fewer clients, as a result shop owners struggle.

d) Because there are fewer job seekers, the remaining people will find odd jobs to do. The situation might arise that there are not enough people to do the work.

e) Municipal services will improve, and because service delivery is poor, less pressure will be exerted.

Long term effects of migration on the population

SOCIAL SCIENCES: Geography

Grade 7

POPULATION GROWTH AND CHANGES

Module 8

The long term effects of migration on the population

Activity 1:

To illustrate the long term effect of migration on population structures

[LO 3.3]

1. How has the demography of the world been influenced by long term migration?

1.1 Colonisation and slavery played an important role to give the world population its present features.

Slavery can be regarded as a form of **forced migration**, to put it mildly. Although slavery was already known in Biblical times, the four centuries between 1450 and 1850 were notorious for large scale slavery in the previous millennium. The Arabs, British, Dutch, Portuguese, Spaniards, French and Danish bought slaves, mostly in Africa, but also in the East, and sold some of them in Europe, but they were mostly intended for the new colonies occupied by European countries.

These colonies refer to newly discovered (for Europeans) territories that fell into the hands of European nations between 1500 and 1900, by means of treaties, annexation or war. The fact that European languages such as Spanish and English, and to a lesser degree French, are spoken all over

the world today, is a result of colonisation. North America, South America, Africa, extensive parts of Asia, Australia and New Zealand were “divided” among the European nations.

The results of the practice of colonialism and slavery is not difficult to see today.

- Athletes taking part in the finals of the 100 m at the Olympic Games are often black and English-speaking, but they seldom represent an African state. They usually represent the USA, Canada, the island states known as the West Indian Islands, and so forth. These athletes’ forbears were in most cases taken as slaves and transported to the country which they now represent.
- Citizens of colonies that gained their independence could quite easily emigrate to the “motherland” (where the colonial powers came from). This is how many people from e.g. India, Africa and the West Indian Islands ended up in Great Britain and other European states.
- In our own country the legacy of slavery and colonialism is evident from the composition of our population.

2.2 Contemporary migration patterns

You have already learnt that many Western nations, such as Germany and the Scandinavian countries,

have “old” or “ageing” populations. These countries often have problems getting enough workers (on all levels). Also countries with a particularly high economic growth sometimes need skilled and unskilled labour to maintain this growth. On the other hand, people from rapidly growing populations with a “dead” economy, pursue success in other countries. Contemporary migration patterns are therefore mostly determined by economic considerations.

Apart from the fact that not many German youths are presently joining the labour force, Germans have for the past few decades not been particularly fond of manual labour. To address the shortage of workers, thousands of people from “poor” countries were allowed to take on jobs in Germany. In due course they were joined by their families, so that Turkish descendants today make up a considerable percentage of the German population. Apart from the German language, Turkish is the language spoken most by Germany’s permanent citizens.

The migration of Turks has undoubtedly had a big influence on the composition of the German population. In the same way the population of many other European countries has been changed, especially by migration from their former colonies.

- If only **young people between the age of 20 and 35** decide to leave the Eastern Cape

permanently, in what way would it bring about change in the population structure?

Activity 2:

To discuss other reasons for migration

[LO 3.3]

Migration: the past and the present

Between 1860 and 1911 large numbers of people from India were brought to the former British colony of Natal to work on the sugar plantations. Today their descendants still live mainly in Kwazulu Natal, one of our country's nine provinces. The Islam faith was established in South Africa during the seventeenth century, amongst others by people who had been banned from the Dutch colonies, because they instigated rebellion against the colonial powers. After gold was discovered on the Witwatersrand in the late nineteenth century, many Zulus moved to

that area to work in the mines. This is one of the reasons why Zulu is still the home language of many citizens of the present Gauteng province.

The population of the American city of Miami is supplemented by Americans who choose to retire there, because they enjoy holiday weather all the year round without having to endure the cold of the more northerly states where they used to live.

Many South Africans have left the country over the past 15 years, settling in Australia, New Zealand or Canada. They believe that the salaries they earn there will never be matched in South Africa. Some of them even prefer the political dispensation in these countries.

In 1846 Ireland was stricken with disaster when the potato crop was a complete failure. Tens of thousands of people died of famine and misery, or emigrated. The Irish population dropped by two million.

Jamaica, an island in the Caribbean Ocean, was “discovered” by Columbus in 1494, and became a Spanish colony in 1509. The island, then called Santiago, was ruled by eight Spanish families. The original population, Indian Arowaks, were exterminated and replaced with African slaves.

Almost 90% of the Australian population live in the south-eastern part of the country. The interior, consisting mainly of steppes, desert and also salt desert, is practically uninhabitable.

Colonial governments found that the local populations of many African countries were unable

or unwilling to engage in the new economy. As a result they imported workers from other parts of the world. For the same reason the British imported people from India to help build the railway line between Mombasa and Kampala (Uganda). The Indians remained there after their contracts had expired, and today they form the backbone of the entire East African economy.

Large scale emigration can influence countries in a very negative way.

If circumstances force people to leave the country of their birth permanently, it is often the most enterprising people, the entrepreneurs, who take the big step. The rest is often too scared to venture into the unknown. When the top human potential of the country of origin leave, it is often to the country's further detriment.

□ The opposite is true of the country to which these people migrate. Immigrants of this calibre are an asset to their new country.

□ Could this be the reason why the population of the USA is so enterprising?

2. Wars and upheavals in the Great Lake area and how conflict and war affect the population of the countries of central Africa

War is the most important event that disrupts populations, and obstructs development.

During the last four decades Africa lost approximately eight million people in violent conflict situations during thirty civil wars. Since the beginning of the nineties of the previous century more than four million people died, 24 million were uprooted in their own countries and 18 million fled across the borders of their country.

The countries of the Great Lakes area were affected the most.

- October 1993: a war broke out in Burundi in which as many as 300 000 people would die during the following ten years. 840 000 citizens of Burundi lived as refugees in neighbouring countries by 2002, mostly in Tanzania. The Tanzanians who experienced a shortage of resources, were not very pleased with the situation.
- 1994: War broke out in Rwanda between the Tutsies and Hutus (the same two ethnic groups who also fought against each other in the neighbouring Burundi). Eventually approximately 500 000 people died in Rwanda before peace was made.
- 1998: Soldiers from Rwanda, Burundi and Uganda attacked the Democratic Republic of the Congo (DRC). In the war that ensued 3,3

million people were killed.

Activity 3:

To do research on the effects of conflict and war on populations in Central Africa

[LO 1.5]

Research the following and complete:

- a) The following lakes of Central Africa are called the Great Lakes because of their size:
- b) The states situated in this area are:

Conflict and war in Central Africa are responsible for more than the loss of lives:

- During a state of war or civil war, medical services and drought relief cannot be executed efficiently where the need arises. The result is that famine and disease take a bigger toll than in times of peace!
- Thousands of children are orphaned.
- Children often serve as soldiers.
- Human rights are violated as a matter of course.

- Millions of people end up in refugee camps for years.
- Economies suffer, because funds are used for war purposes instead of development.
- Infrastructures are destroyed.
- Agricultural development comes to a standstill.
- As a consequence of these wars, the biggest future threat to the countries in question is probably the large number of youths who are left without schooling, jobs or any expectations for the future. This is an extremely dangerous situation!

Activity 4:

To give an informed description of the effects of war on the population

[LO 3.4]

- Once war and conflict ends, a country must rescue what is left!

a) Using the above information, take your time to think on these matters. Add **your personal insights** and **describe the population** of a country at the end of a twenty year period of armed conflict.

b) If you were the secretary general of the United Nations, what would you do to prevent this type of war (and its consequences) in Africa?

c) You are the **minister of population development and education** of a country when a twenty year period of war has come to an end. What steps would you take to counter the damaging effects of war on the population to the best of your ability?

Assessment

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and statistical sources [works with sources];

1.5 uses information to suggest answers, propose alternatives and possible solutions [answers the

question];

1.6 reports on the inquiry using evidence from the sources including maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].

LO 3

EXPLORING ISSUEThe learner will be able to make informed decisions about social and environmental issues and problems.

We know this when the learner:

3.1 identifies challenges to societies and settlements, with focus on population growth and change [identifies the issue];

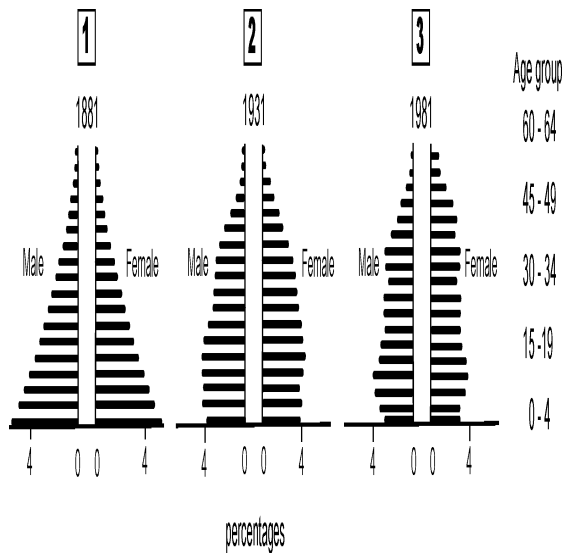
3.2 identifies the factors that contribute to population growth and change [factors affecting the issue];

3.3 identifies processes that affect population growth and change in various places [factors affecting the issue];

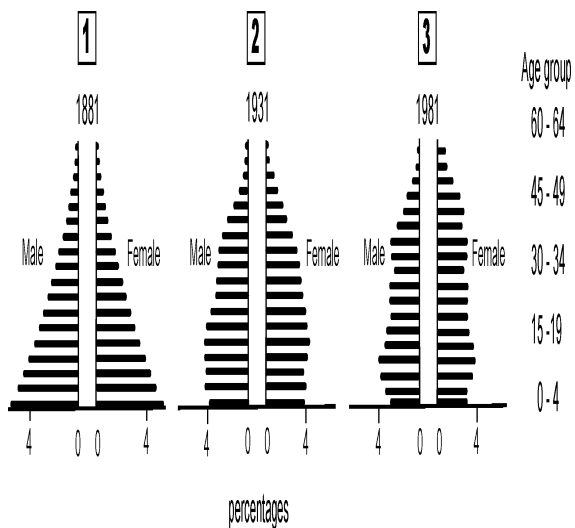
3.4 suggests ways of responding to issues associated with population growth and change in a particular context [makes choices].

Memorandum

Activity1:



Old



Young

Activity 2:

a) b

b) c

c) b

d) a

e) b

f) a

g) c

h) a

i) b

Activity 3:

a) Great Lakes: Victoria

Albert

Edward

Kivu

Tanganyika

Malawi

b) Countries in the region: Kenya

Tanzania

Uganda

Burundi

DRC

Activity 4:

a) disrupted families: breadwinner absent, orphans

children who did service as soldiers, cannot be
“normal”

people not equipped for the future: few skills or
education

b) send a peace task force to the region

try to negotiate a long term political solution

offer development aid: develop resources so that
people/countries are not forced to loot and plunder
for survival

c) take care of orphans

“re-educate” the child soldiers

allow people to develop various skills

do everything possible to create jobs

supply suitable accommodation (where parental education can take place)

Population growth and change: the impact of HIV/
Aids

SOCIAL SCIENCES: Geography

Grade 7

POPULATION GROWTH AND CHANGES

Module 9

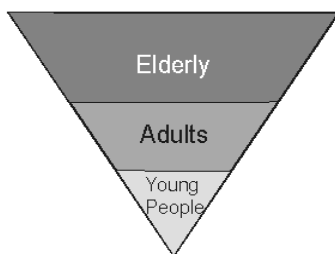
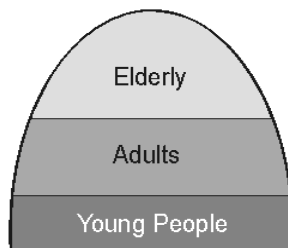
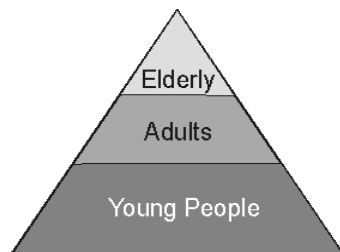
Population growth and change: the impact of HIV/AIDS

One of the most important influences on change in

the population is AIDS. Never in history has there been a human catastrophe of such proportions! The life expectancy of the total population decreases, children in their thousands become orphans, poverty increases, production in almost all sectors of the economy decreases, etc. Africa is the continent that has been affected the most, and South Africa has not been spared the catastrophe! As a whole, we are approaching a point where populations decrease instead of growth taking place.

1. Population

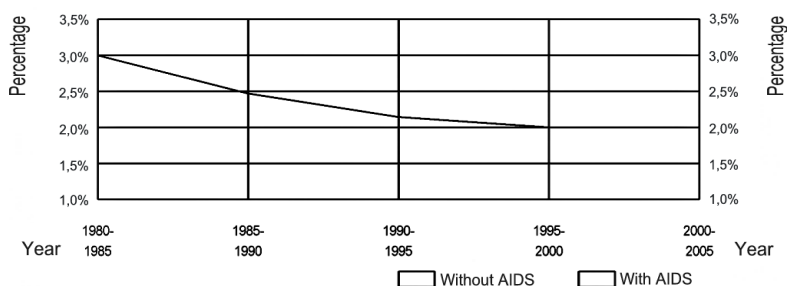
To ascertain the influence of AIDS on the population, it is necessary to look at a description of the population.



2. The ideal situation for which South Africa is striving

“A large portion of the South African population is poor and not adequately literate. South Africa must therefore make a serious attempt to alleviate poverty and bring literacy to an acceptable level. Another ideal for which to strive is to improve health services and to control population growth. Our resources, for example water, are limited.

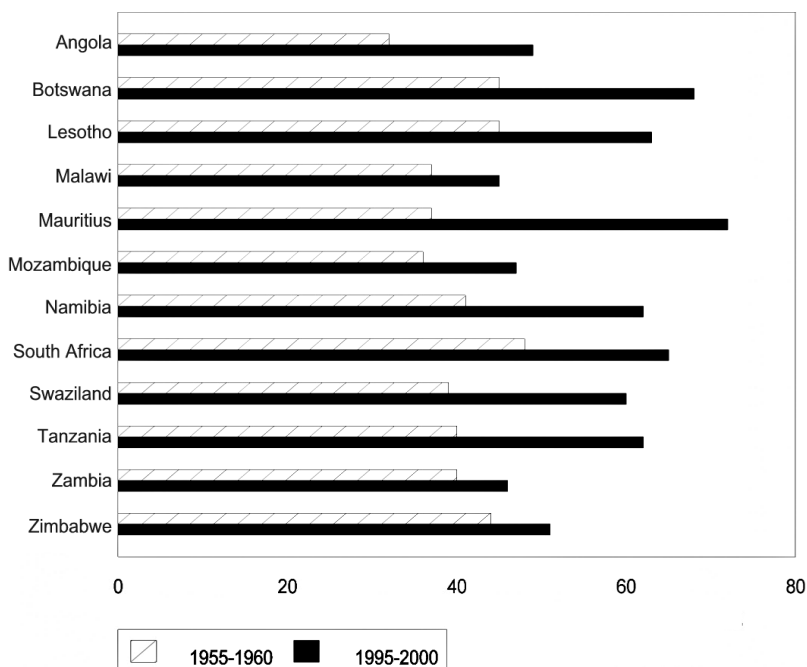
As you will be able to deduce from the graph below, life expectancy has risen as a result of improved sanitation and medical care and the growth in population has decreased during the 20 years ranging between 1980 and 2000. The decrease in population growth can be ascribed partly to urbanisation. In South Africa the population has changed from a youthful population (with a rapid increase) to a more acceptable adult population with limited increase.



South Africa: Growth between 1980 and 2000

Southern African Development Community (SADC):
Life expectancy in years

- Improved medical care, hygiene, and a general improvement of living conditions in the SADC countries, has ensured an increase in life expectancy.
- If you look at the graph you will note that a baby born in the late 1950's in Namibia had a life expectancy of 40 years, while a baby born 40 years later can expect to live 20 years longer.



..... and then the HIV/AIDS epidemic broke out. People who speak about the pandemic, rather than epidemic, are actually right, because the

disease occurs right across the country, the continent and the rest of the world!

Aids: what does this mean?

- The word is an acronym, and is composed of the first letters of **Acquired Immune Deficiency Syndrome**. This means that a person has acquired a virus in his/her body, which destroys the body's ability to build up immunity against disease.
- When one has the virus, you are immediately **HIV positive**, but the virus may remain dormant and not affect the person's health. Such a person may be able to live for years without being affected by this virus.
- A good way to describe a person who is **HIV positive** is to take the letters **HIV** and use them backwards to say **Virus In Human**.
- When the virus becomes active and starts affecting the person's health, we say that the person has **AIDS**. Now we can use the **S** to indicate the person has a **Sickness**. He/she is no longer able to build up immunity to sicknesses and any sickness can have a serious effect on him/her.
- A person acquires the virus by a blood transfusion, by means of sexual intercourse or where blood is mixed – a person's blood on a razor blade or injection needle comes into contact with an open wound on someone else

and the virus is transmitted to them. An expectant mother can also transmit the virus to her unborn baby. After the birth of the baby, the virus can be transmitted to the baby if it is breastfed.

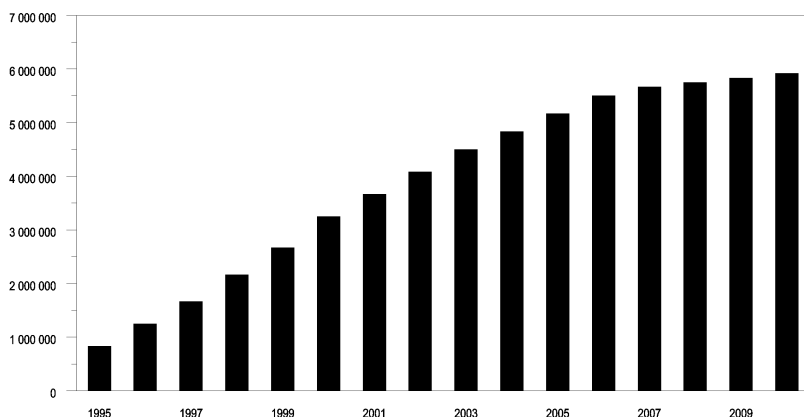
- If someone is tested for the virus and discovers that they are HIV positive, they can look after themselves and extend the dormant period of the virus by avoiding or decreasing the amount that they smoke and drink, by eating healthy foods, exercising regularly and getting sufficient rest and sleep.

3. Statistics

The incidence of HIV/AIDS in South Africa is disturbing .

- Approximately 2000 people become HIV positive daily!
- Approximately 800 people die daily from AIDS-related diseases!
- A statement of the Department of Health says, "More than 6,2 million South Africans were infected by HIV or AIDS by last year (2004), an increase of 700 000 from 2003". (*The Cape Times*, 12 July 2005).

'n Projeksie van MIV+ Suid-Afrikaners in ouersdomgroep 15 to 59 jaar



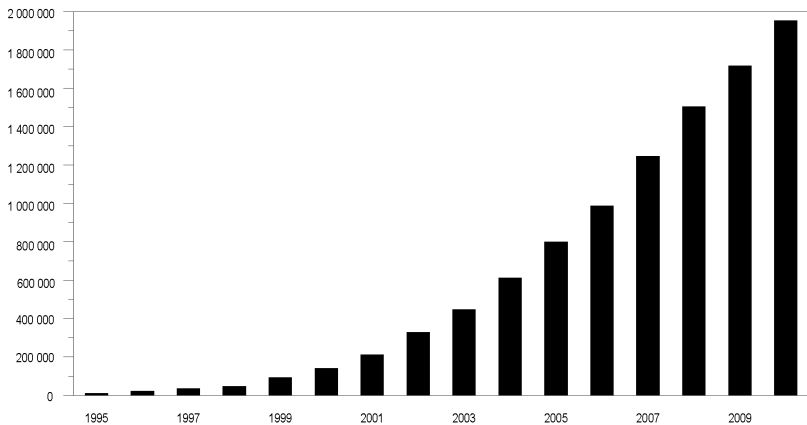
Figuur 4

Figure 4: A previous projection of HIV positive South Africans in the age group 15 to 59 years of age.

	2001	2010		
	With AIDS	Without AIDS	With AIDS	Without AIDS
Botswana	39,3	70,5	29,0	73,2
Ethiopia	45,2	56,1	42,1	60,1
Kenya	48,0	64,9	44,3	68,4
South Africa	49,0	65,7	35,5	68,3
Swaziland	40,4	57,7	29,7	61,5
Zimbabwe	37,8	69,9	32,5	72,8
Zambia	37,2	58,7	38,9	72,8

Life expectancy in some African states

VIGS-wesies (onder 15 jaar)



Figuur 6

AIDS orphans (under 15 years of age)

HOW SERIOUS IS THE HIV/AIDS CATASTROPHE REALLY ?

Health reporter , Cape Town

The role of poverty

The light-hearted argument about who came first, the hen or the egg, can be used when discussing the spread of AIDS, because poverty leads to the spread of the illness, while the illness adds to the enormous problem of poverty in South Africa.

The sick breadwinner is unable to earn money for the employer and can also not contribute money for the family's needs, and also places an additional

burden on the country's health budget

Added to the terrible living conditions of many poor South Africans, is poor education and ignorance. This often leads to irresponsible behaviour. Unemployment results in people moving around in search of work and this contributes to the spread of the disease.

Another two aspects of poverty are that the patients' chances of improved living conditions and better nutrition is just about impossible and on top of that the overcrowded houses and informal housing makes it impossible for the patient to improve his or her condition.

Who is affected?

It is mostly people in the 15 to 39-year age group that are HIV positive. They are also parents of young children who are often born HIV positive. But this age group is also economically the most active group in the community.

Although those who contract the virus most generally are in the 15 to 39-year age group, other age groups and groups other than the poor are not excluded from contracting the virus.

The management of social services

One aspect of the country's management,

specifically the management of social services, has to do with the care, or lack of care of the millions of AIDS orphans. According to some predictions, there will be no less than 2,5 million orphans under the age of 15 years by the year 2010! What is going to happen to these children? Who will look after them? How will they survive in an already poor community?

Infected and affected

Perhaps combating and management of the consequences of HIV/AIDS can be found in the word “affected”! One group of people are infected or run the risk of infection and will get the disease. The rest of us are affected – also those who think that they will never be infected.

Those that accept that they are affected will be part of the search for a solution.

And the solution?

People must change their behaviour. This means everyone! Someone who did not have the virus has said, “The solution of the problem begins with me.” What would he have meant by this?

From: *Die Burger*, 20 May 2002

Learners must use the information provided in the first five to six pages to be able to do the

assignments that follow.

Enjoy reading and working on this research and thinking assignment! It will not always be easy! Consider the headings carefully when you are looking for information.

Activity 1:

To make deductions from forecasts

[LO 1.2]

- Use the statistics on page 37 and the predictions in figures 4 and 5 to supply the necessary numbers:
- In South Africa at present, about_____ people between 15

- and 59 are HIV positive.
- There are about _____ AIDS orphans in our country.

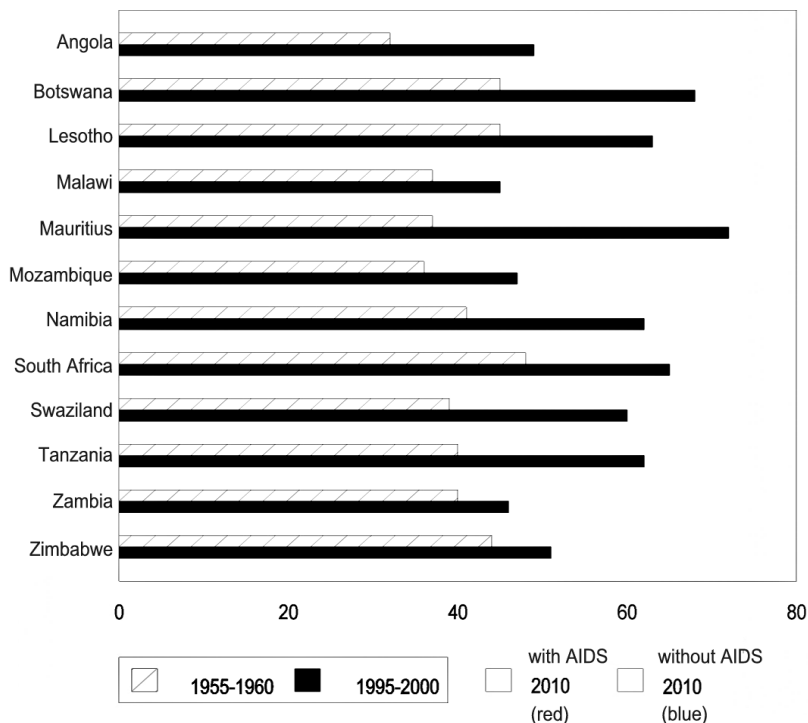
Activity 2:

To make deductions from a graph

[LO 1.2]

- If the life expectancy of a country's inhabitants increases, it will be an indication of progress. The life expectancy of the people of the Southern African Development Community (SADC) has increased, as we can see in Figure 3.
- Complete the horizontal column graph for

the five SADC member countries according to the information in Figure 5. Draw one column only, colouring it red for the expected age with AIDS, and blue for the age that could have been reached without the AIDS catastrophe.

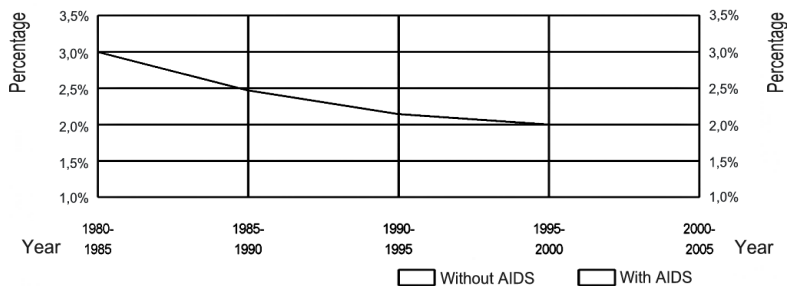


Activity 3:

To make deductions from a graph

[LO 1.2]

- The information in Figure 2 indicates a healthy reduction in the growth of the South African population. Death from AIDS may unfortunately reduce the growth to such an extent that it will have a negative effect on the country.
- Researchers have predicted that the reduction between 2000 and 2010 without AIDS could be 1,7%, but that it could decrease to 1,5%, with AIDS. Complete the graph according to this information. Use blue to indicate the growth without AIDS and red to indicate growth with AIDS.



Activity 4:

To make deductions from newspaper articles

[LO 1.5]

- Collect newspaper articles dealing with this subject and display them on your notice board. Articles indicating a solution for any problem relating to AIDS should be indicated in a particular way. You can decide how.

Activity 5:

To make deductions from newspaper articles

[LO 1.5]

- Read the newspaper articles dealing with the AIDS catastrophe that is staring our country in the face once again, think about it and discuss it with your friends. It ought to be clear that unless some plan to combat AIDS is devised soon, South Africa faces a major catastrophe.
- Write a paragraph or two about the possible problems on a separate sheet of paper. Use the following words and phrases:

Provide your paragraph with an appropriate heading.

Activity 6:

To make deductions from newspaper articles

[LO 1.5]

- Near the end of the newspaper article someone is quoted as having said, “The solution of the problem begins with me.” Explain what you think this person meant in one sentence.

Activity 7:

To report on making adjustments in various areas

[LO 3.1]

- The same truth is repeated four times in the frame alongside. In the light of the dangers for South Africa that are presented through AIDS, it is obvious that much adjustment is necessary for survival.
- Discuss the adjustments in the following areas that are required to meet the challenge and report your ideas to the class:
 1. the care of orphans;
 2. the skilled workers in a factory become ill and fewer;
 3. costs in the Department of Health double each year;
 4. education.

Activity 8:

To explain the symbolism of the AIDS ribbon

[LO 1.5]

We see many people wearing red ribbons. Why do they do this?

Assessment

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and

statistical sources [works with sources];

1.5 uses information to suggest answers, propose alternatives and possible solutions [answers the question];

1.6 reports on the inquiry using evidence from the sources including maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].

LO 3

EXPLORING ISSUESThe learner will be able to make informed decisions about social and environmental issues and problems.

We know this when the learner:

3.1 identifies challenges to societies and settlements, with focus on population growth and change [identifies the issue];

3.2 identifies the factors that contribute to population growth and change [factors affecting the issue];

3.3 identifies processes that affect population growth and change in various places [factors affecting the issue];

3.4 suggests ways of responding to issues associated with population growth and change in a particular context [makes choices].

Memorandum

Activity 1:

These numbers change from year to year.

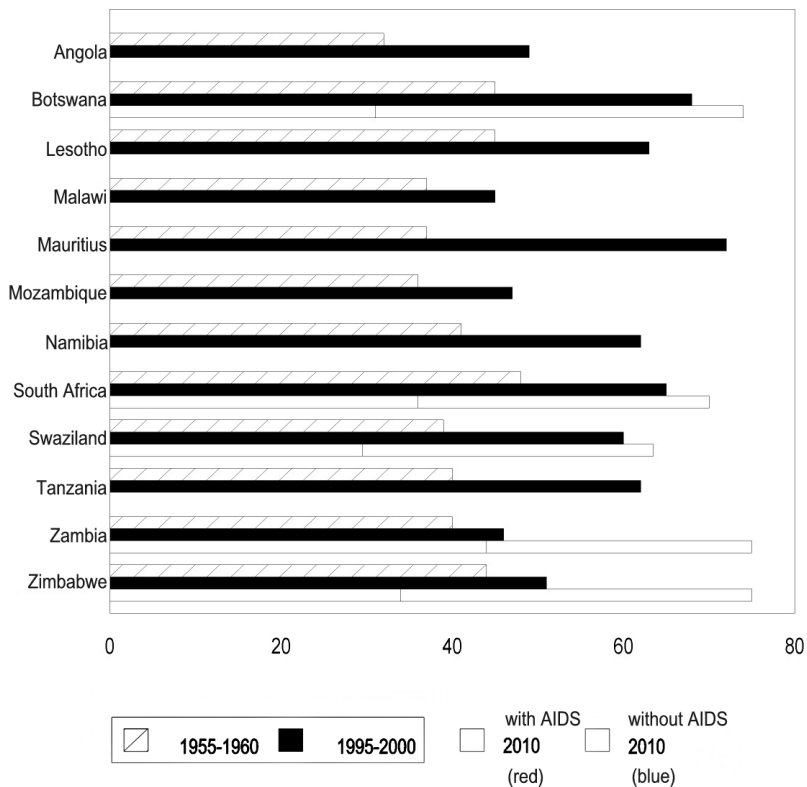
2002 4 000 000 HIV + 380 000 AID orphans

2003 4 700 000 HIV + 450 000 AID orphans and so on.

Answers will differ, depending on the learner's ability to read/understand statistics.

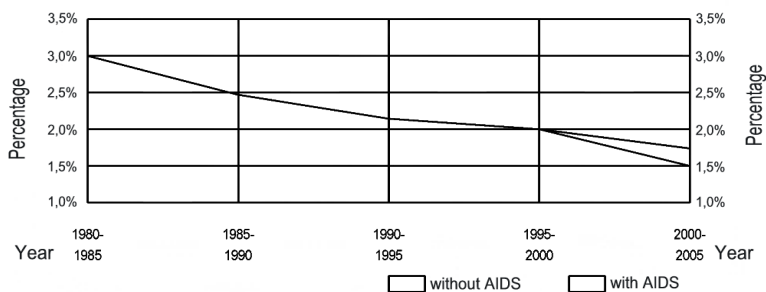
Small differences do not matter. The aim of the exercise is to give the learner an idea of the extent of the problem – and to let them find out about it themselves.

Activity 2:



Activity 3:

South Africa: Growth between 1980 and 2000



Activity 4:

If it is at all possible, the ideal would be to emphasise the positive, especially if a creative approach to the solution of the problems of HIV/AIDS can be found

Activity 5:

The aim of Activity 6 is to see whether the learner can interpret the concepts in the context of the South African situation. Words can be used in any order.

The **skilled workforce fishes** and the factories will have problems with production.

The purchasing power is reduced because money must be spent on medical care for family members.

When soldiers and policemen who are HIV positive become ill threats to the security of the country and crime will increase because there will be fewer of them.

The care of millions of orphans is a heavy burden on the remaining family members and the state

Activity 6:

Possibilities:

He/she must change their attitudes to the sickness/disease

She/he must do everything possible to resolve the problems

Activity 7:

1. A special policy, aimed at protecting children from the problems they will encounter, must be formulated.

New types of orphanages must be designed and built.

1. Greater mechanisation (But this will create other problems).
2. All departments will have to adjust their budgets to accommodate the extra expenditure on health care.
3. People (adults and children) must be educated to limit the spread of the HIV virus, and also to manage the consequences of AIDS.

Activity 8:

People must be made aware of HIV/AIDS. It is a reality for all of us and not something that only affects other people.

The reading, analysing and interpretation of topographical maps

SOCIAL SCIENCES: Geography

Grade 7

MAP WORK

Module 10

The reading, analysing and interpretation of topographic maps

The ability to use and interpret maps is an important part of a person's geographical skills. When using a map you should remember that:

- the real picture on scale is reduced;
- the phenomena and patterns are seen as if shown from above, looking down on a landscape;
- symbols are used to show characteristics and phenomena.

Different kinds of maps are drawn for different functions.

Activity 1:

To identify a variety of maps as geographical and environmental resources

[LO 1.1]

See how many different kinds of maps you can identify in your atlas. Write down the names underneath one another, and indicate each one's most important function.

Activity 2:

To interpret maps containing a variety of information

[LO 1.2]

1. Different scales and calculating distance

You already know that a map is a REDUCTION of reality, as seen from above. To reduce a map in this way, you have to use a certain SCALE.

The scale of a map MUST be indicated at the bottom of a map. Different kinds of scales can be used:

On a line scale you can measure the distance between two places directly.

Ratio scale, e.g. 1:50 000 which means that 1 centimetre (or whatever length unit is used) on the map is equal to 50 000 centimetres (the same length

unit) in reality.

If two places on the map are 4 cm away from each other, you will first have to make a calculation to determine the real distance, i.e. $4 \text{ cm} \times 50\,000 = 200\,000 \text{ cm}$

$$= 200\,000 \text{ cm} \div 100\,000$$

$$= 2 \text{ km}$$

Word scale, e.g. 1 cm represents 20 km. If the distance between two places on the map is 3 cm, you will also have to do a calculation first: $3 \text{ cm} \times 20 = 60 \text{ km}$

One of or all the different kinds of scales can be indicated on a specific map.

Activity 3:

To learn how to use line scale

[LO 1.3]

1. Measure the length and width of your classroom and then draw a floor plan. Use a scale of 2 cm to represent 1 metre.

Draw another floor plan of your classroom, but now use a scale of 1 cm to represent 1 metre.

2. The two drawings of the same classroom differ in size because there is a difference in the SCALES used for drawing them.

3. Measure something else at school that is quite a bit bigger than your classroom, for example the hall or the rugby field. Draw it on the same size paper that you used to draw your classroom. To be able to do this, you need to have more metres represented in a centimetre for your plan/map than was the case when you drew the classroom. The scale will therefore differ now because you have to draw a larger area on paper of the same size.

Indicate the scale as a line scale on your map.

Activity 4:

To calculate distance on an atlas map and a globe

[LO 1.3]

Open your atlas at a map of Southern Africa. Determine the real distance between the following places. Measure along a straight line (as the crow flies).

a) Cape Town – East London _____ km

b) Durban – Johannesburg _____ km

c) Pretoria – Kimberley _____ km

d) Kimberley – Cape Town _____ km

2. Determine the distances between the following places on a globe:

a) Durban and Sydney _____ km

b) Cape Town and Rio de Janeiro _____ km

c) Paris and New York _____ km

d) Tokyo and Moscow _____ km

2. Map symbols and map keys

Included in this module is a 1:50 000 topographic map of Ceres, as well as a complete list of map symbols. These map symbols should be studied to enable you to identify the different characteristics when you study the map of Ceres.

You need not necessarily do this exercise about Ceres. Ask your teacher to order a map of your own city or town and district in time to enable you to study your familiar surroundings as indicated on the map. You'll also be surprised at how much information it contains. Study the way in which mountains with different forms, mountain ravines, valleys, etc. are indicated.

WRITE TO: THE STATE PRINTER

PRIVATE BAG X85

PRETORIA

and order an official 1:50 000 map of the area in which your town or city is situated. You'll be surprised at how little it costs.

Assessment

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

1.1 identifies a variety of geographical and environmental sources relevant to an inquiry [finds sources];

1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and statistical sources [works with sources];

1.3 measures distances on globes atlases and maps using line scales [works with sources];

1.4 uses local maps and/or orthophoto maps to locate and investigate the issue and its context

(compares with field observations) [works with sources];

1.5 uses information to suggest answers, propose alternatives and possible solutions [answers the question];

1.6 reports on the inquiry using evidence from the sources including maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].

Memorandum

Activity 1:

Kinds of maps	Function
Relief and drainage	Indicates mountains, rivers, etc.
Climatic regions	Indicates temperature, air pressure, rainfall, etc.
Vegetation	Indicates typical vegetation
Population distribution	Indicates distribution of people
Human activity	Indicates economic activities
Political	Indicates provinces and

Mineral resources	capital cities Indicates typical mining activities
-------------------	---

Activity 4:

1. a) ± 925 km

± 500 km

± 500 km

± 840 km

2. Determine the distances between the following places on a globe:

a) Durban and Sydney 8 250 km

b) Cape Town and Rio de Janeiro 4 750 km

c) Paris and New York 5 250 km

d) Tokyo and Moscow 7 250 km

Reading, analysing and interpreting vertical aerial photos and orthophoto maps

SOCIAL SCIENCES: Geography

Grade 7

MAP WORK

Module 11

Reading, analysing and interpreting vertical aerial photos and orthophoto maps

- Before it can be expected of you to interpret vertical aerial photos and orthophoto's any further, you will need more information.

A **vertical aerial photo** of a specific area is taken vertically from above from an aeroplane.

Advantages

- Most objects are visible.
- The layout of roads and railway tracks are clearly visible.
- High trees, mountains and buildings can easily be distinguished by their shadows.

Disadvantages

- The photos are as seen from above and the view is therefore odd to man. It is an unusual visual angle and one needs a lot of practice, knowledge and experience to read it.
- It is in black and white and can be confusing.
- **Vertical aerial photos** are used as the basis when topographic maps are drawn. Information from the aerial photos is transferred by cartographers (people trained to draw accurate maps) on paper by using the international symbol key and colours, which you are familiar with.
- Today **orthophoto maps** are very popular in map studies. The advantages of the 1:50 000

topographic map and vertical aerial photo are combined to draw an orthophoto map. An orthophoto map is therefore a vertical aerial photo on a lower level of 1:10 000, with contour lines added.

- Contour lines of 5 metres intervals are used in order to identify detail. Even names of places, railway lines and roads are shown on the photo. The objects are therefore easily identifiable. Maps and photos therefore have their own characteristics, advantages and disadvantages. A clear presentation of a landscape is actually only possible when using a topographic map and photo together.
- A **topographic map** is the presentation of the surface of an area on scale, using a symbol key. This provides a simplified picture on which only certain characteristics are shown. A topographic map is therefore not always accurate and can even be outdated.
- A vertical aerial photo and orthophoto map are very useful tools when used together with a topographic map. Only then accurate map and photo readings can be made.

1. How do you study or interpret a vertical aerial photo or orthophoto maps?

- Size of objects

If the scale of the photo is calculated, then the

length of objects can be determined and the distance and square area can be calculated. This method is used to determine the area of an urban settlement with a grid pattern.

- Shapes of objects
- **Man made phenomena** are generally evenly distributed. Here you can consider the shape of buildings, ploughed lands, roads, railway lines and dam walls. **Natural phenomena** and objects are evenly distributed, like mountains, rivers, forests, and grasslands.
- **Roads** are broad grey lines on a photo. National roads are usually straight with no sharp curves. Secondary roads appear narrower and have many curves. Railway lines appear as small dark grey lines with gradual curves. Roads often have perpendicular connections with other roads, whereas railway lines gradually connect up with other lines.
- **Rivers** are wide and dark grey lines with curves and bends where they meander through different areas, and other side streams connect up with the main stream. The V-shape of a side stream connection will ALWAYS point down stream and can be used to determine the direction of flow.
- The tint and shading of objects

Black, white and grey tints can be seen on aerial

pictures. The tint depends on the amount of light that is reflected by the photographed object. Light colours appear as light grey and dark colours as shades of darker grey.

The tint of **water** varies between white and black. Clear water appears darker than muddy water, because muddy water reflects more sunlight. Humid soil surfaces also appear darker than sandy soil.

Vegetation can be divided in two types according to their appearance on aerial photos:

- **Natural vegetation** like forests and grasslands is easy to identify due to their diverse pattern. Trees usually have dark tints.
- **Planted trees** and agricultural crops are also easily identified by the straight lines in which they are planted. The tint of a cultivated land depends on the height of the plants. For example, maize-fields with tall plants will appear darker than fields with small plants, because the tall plants absorb more sunlight than the small ones. Cultivated land usually has a patchwork quilt appearance of darker and lighter tints.

Gradients facing the sun reflect more light and therefore appear lighter than those with a southern gradient.

- Texture of objects

It refers to the general impression that objects make and can be described as SMOOTH, FINE, COURSE, ROUGH or DOTTED. Photos of cultivated land and water show a fine, smooth appearance. Shrubs and forest vegetation has a dotted appearance, whereas uninhabited mountainous areas have a rough appearance.

- Shadows

Aerial photos are usually taken between 10:00 and 14:00 when shadows are at their shortest. Shadows are of great help in identifying objects. Shadows that fall outwards indicate a higher area such as a hillside, mountain, or high building, whereas shadows falling inward indicate lower lying areas such as riverbeds and excavations.

- Patterns

When analysing aerial photos, much information can be obtained from patterns. Certain patterns are characteristic of specific objects and phenomena. Bushveld vegetation has a diffused pattern, but citrus orchards or vineyards have linear patterns.

The arrangement of buildings and streets show a typical urban settlement pattern. The older, central business centre has a grid pattern, and the newer residential areas appear to have rather concentric patterns.

We therefore have two main pattern types that can be identified on an aerial photo:

- the physical landscape, and
- the cultural landscape.
- Tips for reading, analysing and interpreting vertical aerial photos and orthophoto maps
- Mark the general patterns that clearly appear on the photo. It is usually done by placing trace paper on the photo and then the profiles of the patterns are traced. The different characteristics are named.
- Carefully study the shape, size, shadow, tint, and texture of the related characteristics to identify objects.
- Ask certain kinds of questions that can assist in identifying objects:

Relief characteristics

- Are there mountains, hills and valleys?
- How steep are the slopes?
- Are there any rivers?
- How wide are the river valleys or plains?
- In which direction does the river flow?
- Is the river perennial or non-perennial?

Vegetation

- Which types of vegetation exist?
- Which areas are covered with natural

vegetation?

Transport systems

- Which types of transport occur?
- Which types of roads criss-cross the photo?
- Are the railway lines single or double lines?

Farming

- Do they farm with livestock or is it crop farming? Or both?
- What is the size of the cultivated land?
- What kind of crops are grown?

Settlements

- What types of buildings can be seen in the urban areas?
- What is the layout of farmsteads and outbuildings?
- Are there any industries? If so, which types?

Activity 1:

To identify and interpret information on

a topographic and orthophoto map of the known environment

[LO 1.4]

- Your teacher will hand you a 1:50 000 topographic map and an orthophoto map of your area. Try to apply all the knowledge that you gained from the previous pages by answering your teacher's questions.

Activity 2:

To identify a problem on an orthophoto map and to compare it with the real situation

[LO 1.4, 1.5]

- First work individually and then in your groups. Try to identify a problem that appears on the orthophoto map of your environment. If no problem exists, try to identify a potential problem, such as a flood, landslide, fires, erosion, the need for reservoirs, poor road or street planning, etc. Suggest a solution to the problem.

Activity 3:

To investigate an identified problem during a fieldwork excursion and to write a report on it

[LO 1.6]

- If possible your teacher will organise a fieldwork excursion to visit the site of such an identified problem. Collect data by making use of maps, drawings, photos, etc. After the

excursion each group must write a report on their findings and also suggest a solution for the problem. The report must be written in the space below.

FIELD OBSERVATION

Position of site:

Problem:

Aids used in investigation:

Findings:

Suggested solution:

Names of group members:

Assessment

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and

environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

1.1 identifies a variety of geographical and environmental sources relevant to an inquiry [finds sources];

1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and statistical sources [works with sources];

1.3 measures distances on globes atlases and maps using line scales [works with sources];

1.4 uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources];

1.5 uses information to suggest answers, propose alternatives and possible solutions [answers the question];

1.6 reports on the inquiry using evidence from the sources including maps, diagrams and graphics; where possible uses computers in the presentation [communicates the answer].

Reading, analysing and interpreting vertical aerial photos and orthophoto maps

SOCIAL SCIENCES: Geography

Grade 7

MAP WORK

Module 12

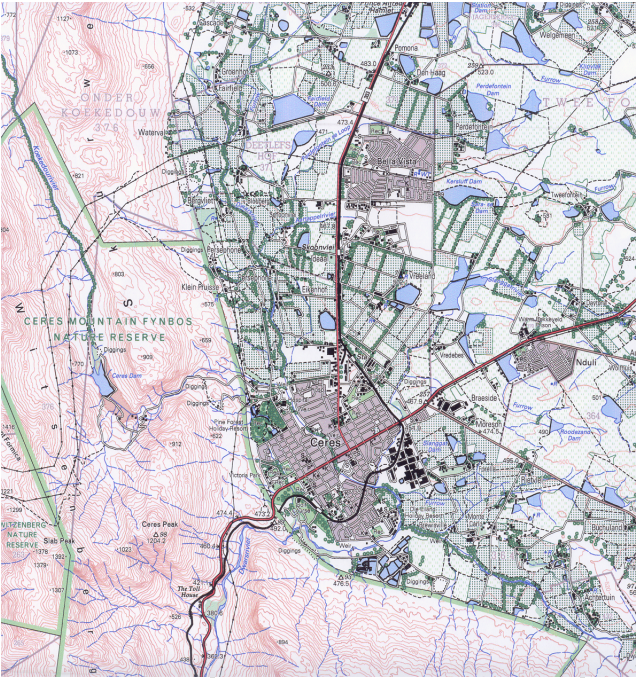
UNDERSTANDING THE SYMBOLS ON A TOPOGRAPHICAL MAP

Activity1:

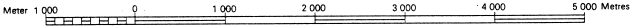
To understand the symbols on a topographical map

[LO 1.4]

- | | | | | |
|--|--|--|--|--|
| | | | | • Study this part of the Ceres 1:50 000 map. |
| | | | | |

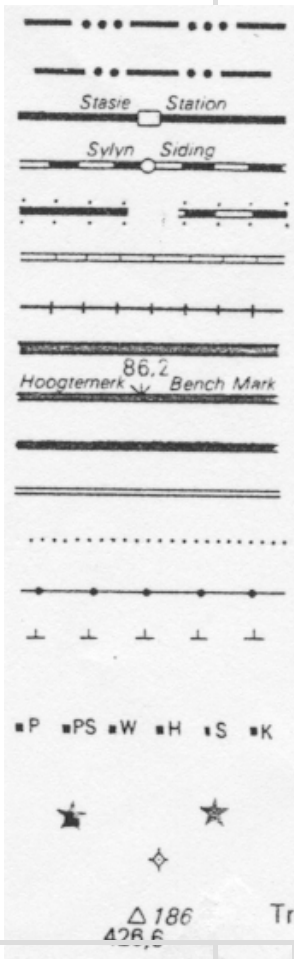


1:50 000

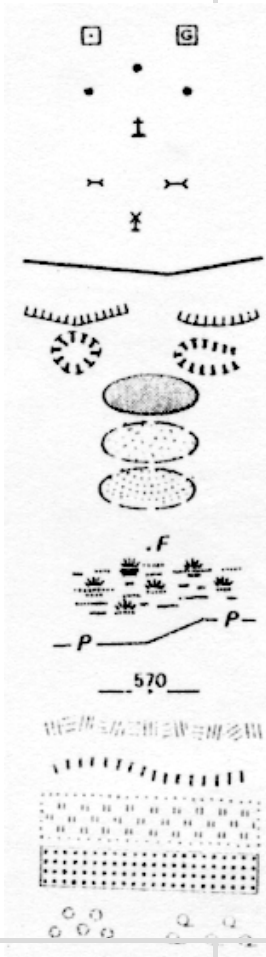


Verklaring Reference

--	--	--	--	--



Verklaring Reference



1. Now answer the following questions:

a) How many stations and sidelines are indicated?

b) Is this town serviced from a single or double track?

c) Name the river running through the town.

- d) Name the river flowing into the Ceres dam.
- e) How many separate living areas are indicated?
- f) How high is the highest peak in the Witsenberg?
- g) Determine the distance between the police station and the sideline (small station) Skoonvlei.
- h) Explain why the contours in the region of the Aartappel River (north of the town) are far from each other, while northwest of Ceres they are very close to each other.

These topographic maps cannot be found in atlases. However, it can be ordered from The State Printer in Pretoria where they are prepared by cartographers from vertical aerial photos and orthophoto maps.

Assessment

Learning Outcomes(LOs)

LO 1

GEOGRAPHICAL ENQUIRYThe learner will be able to use enquiry skills to investigate geographical and environmental concepts and processes.

Assessment standards(ASc)

We know this when the learner:

- 1.1 identifies a variety of geographical and environmental sources relevant to an inquiry [finds sources];
- 1.2 organises and interprets information relevant to the enquiry from simple graphs, maps, and statistical sources [works with sources];
- 1.3 measures distances on globes atlases and maps using line scales [works with sources];
- 1.4 uses local maps and/or orthophoto maps to locate and investigate the issue and its context (compares with field observations) [works with sources];

Memorandum

Activity 1:

1. 4
2. single track railway
3. Dwars River

4. Koekedou River

5. Main town, second direct east of main town, third north east of main town Nduli.

6. Slab Peak 1 392 m

7. $6,2 \text{ cm} \times 50\,000 = 310\,000 \text{ cm} \div 10\,000 = 3,1 \text{ km}$

8. Aartappel River region is situated in the wide, even river valley, where contours are far from one other to represent a flat slope. The south western region is a higher, mountainous area with steep, mountainous slopes. The contours are therefore very close to one other.